Earth Sciences Sector
Business Plan

2001/2004

Message from the Assistant Deputy Minister

I am pleased to introduce the 2001/2004 Business Plan for the Earth Sciences Sector. The plan provides details of the services and products that we will deliver to government, industry, universities and the general public over the next three years.

As the Sector moves into its sixth year, its component parts – the Geological Survey of Canada, Geomatics Canada and the Polar Continental Shelf Project· have developed a unified vision of the contribution they make to the economic and social development of Canada. The Sector's vision is one of supporting the government's agenda and priorities through the provision of leading-edge Canadian geoscience and geospatial data and knowledge.

As outlined in all previous editions of the Business Plan, the programs of the Sector and goals of the department are fully aligned. As the Plan continues to evolve in structure and format this alignment will remain clear and understandable to our clients and stakeholders. Whether staff, clients or stakeholders, it is important that you understand what we intend to deliver.

Irwin Itzkovitch, Ph D
Assistant Deputy Minister
Earth Sciences Sector

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1. Earth Sciences Sector: The Context

Introduction

The Earth Sciences Sector (ESS), which represents approximately 35 percent of the total resource allocation of Natural Resources Canada, was formed in 1995 through the amalgamation of Geomatics Canada (GC), the Geological Survey of Canada (GSC) and Polar Continental Shelf Project (PCSP). As a Sector of NRCan based predominantly on science and technology, ESS is the principal national focus for the provision of earth sciences knowledge and innovation to policy and decision-making in the Government of Canada. GC provides a reliable system of surveys, maps, remotely sensed data and geographically referenced information describing the Canadian landmass; the GSC is the leading national contributor to a comprehensive geoscience knowledge base of Canada; and PCSP contributes to scientific endeavors in Canada's Arctic regions by providing comprehensive logistics support services.

Major forces shape the environment in which ESS operates: globalization, rapidly evolving technology, new demands for information and knowledge from a broadening client base, complex policy issues and government priorities requiring earth science advice, changes in governance at all levels, and current and future capacity gaps in terms of people and facilities. At the same time, substantial opportunities exist for ESS and the earth sciences as the recognition of their contribution, to public and private sector policy and decision-making, increases.

A new and broader range of clients is placing greater demands on the Sector's expertise and knowledge about a wide range of issues. Also, the integration of ESS' scientific and technical knowledge into policy options and recommendations for all levels of government has increased in importance such that ESS' knowledge must be communicated quickly in ways that are understood by a much broader client base. The revolution in communications technology, which via the Internet and the wide use of computers, will place ESS' knowledge about the Canadian landmass and its resources at the fingertips of most Canadians.

The objectives of the government and of the Department have guided ESS planning, program directions and management focus. They will continue to form the basis for ESS activities for the planning period of this business plan.

Update on Government Priorities

January 2001 marked the beginning of a new Liberal mandate for Canada. The priorities and action plan for this third mandate were outlined in the Speech from the Throne, which officially opened Canada's 37th Parliament on January 30, 2001. The government confirmed its commitment to building a stronger, ever more inclusive Canada and to securing a higher quality of life for all Canadians. The Prime Minister reinforced, in his response to the Speech from the Throne, the government's commitments which follow closely the priorities set out in Red Book III (the Liberal party's election platform) and in the Finance Minister's Economic Statement and Budget Update of October 2000.

The following four themes recur in these documents:

- building a world-leading economy driven by innovation, ideas and talent;
- creating a more inclusive society where children get the right start in life, where quality health services are available to all, and where Canadians enjoy strong and safe communities;
- ensuring a clean, healthy environment for Canadians and the preservation of our natural spaces; and,
- enhancing our Canadian voice in the world and our shared sense of citizenship.

These themes build on the governme .'s first two mandates where economic priorities were key to building a strong economy and secure society. Fiscal management, national unity, trade and investment, service quality and operational efficiency, and, knowledge, skills and innovation for jobs and growth were significant priorities. With a sound fiscal and economic foundation, the government is now progressing on social issues. With a strong economy and budgetary surpluses, the government has been able to cut taxes, invest in Canadians' key priorities of health and education, and position Canada to weather the US economic downturn and fluctuations in the global economy.

The government's four-part plan continues the progress made to date. Investment in the social fabric of the country (health care, children and the environment) and strengthening education, research and innovation will be balanced with a strategy committed to debt and tax reduction.

Building a higher standard of living for Canadians translates into a strategy for increasing Canada's long-term productivity – to put in place both an economic and social environment that supports the best use of capital, spurs innovation and attracts investors. Government priorities will continue to be delivered through close integration of both social and economic programs as well as in partnership with the provinces and territories and across government departments. Canada's prosperity also depends on a clean and safe environment, essential to the health of Canadians and to the future of children.

The October 2000 Economic Statement and Budget Update confirmed the government's priority to strengthen education, research and innovation as the surest paths to success in a knowledge economy. Canada is committed to

accelerating innovation as a vital element of productivity and competitiveness. Its goal is to move Canada, by 2010, to the top five countries for research and development performance by at least doubling federal expenditures on research and development. To support this goal the government will:

- support research in environmental toxins, public health and natural resource management;
- facilitate the commercialization of discoveries made in government and industry; and
- help the private sector by maintaining R&D tax credits.

Science and technology plays a major role in accelerating innovation. In April 2000, the federal government developed the Northern Science and Technology in Canada: Federal Framework and Research Plan to ensure that federally funded science and technology continues to improve the quality of life, the environment, social and economic well-being, and the advancement of knowledge in northern Canada.

Recognizing that good governance depends on active and meaningful public participation, the Government of Canada is developing new forms of government service delivery to provide Canadians with access to more information, which they can use to become more involved in policy and decision making than before. The government reconfirmed its commitment to be the most connected government by 2004 and to work with the private sector to make high-speed broadband Internet access available to residents and businesses in all communities.

The government is committed to working with communities, provincial and territorial governments and the private sector to foster economic skills and prosperous economies in First Nations and Inuit communities. In support of this commitment, the government will work with Aboriginal communities to help them take action to prevent disease and injuries, and promote wellness; to support Aboriginal children and youth in learning about their languages and culture; and to create programs for Aboriginal children with special needs.

The Government of Canada is taking action on climate change. Recognizing the need to improve knowledge of the implications of climate change for Canada, the Government of Canada, through the Climate Change Action Fund (CCAF), has provided $7.5M over the past three years to support more than 80 impacts and adaptation research projects. In 2000, the government invested a total of $1.2 billion in a cleaner, healthier environment.

Natural Resources Minister Ralph Goodale and Environment Minister David Anderson released the Government of Canada Action Plan 2000 on Climate Change, in Vancouver in October 2000. When fully implemented in 2005, this Plan will take Canada one third of the way to reaching the goal of reducing its emissions to 6 percent below 1990 levels. To achieve this goal, the government will focus on energy efficiency, new energy technologies (such as fuel cells), renewable energy and energy efficient products. Action Plan 2000 on Climate Change also includes measures relating to impacts and adaptation, part of Canada's risk management approach to climate change.

External Drivers

The environment continues to be an issue of major global importance. Issues such as climate change and the long-range transport of pollution are international concerns. Canada recognizes that a healthy environment is an essential part of a sustainable economy and our quality of life. Science and technology contribute to the understanding of the natural world and the impact of human activity.

Most industrialized nations agreed to undertake measures to reduce green house gas emissions at the December 1997 United Nations Framework on Climate Change (UNFCC) in Kyoto Japan. Under the agreement, industrialized nations must reduce their emissions of greenhouse gases by an average of 5.2 percent (from 1990 levels) by the period 2008 to 2012. Although the United States signed the protocol, it has not yet ratified it. The U.S. government has recently stated that it is not prepared to take such measures citing the country's energy shortages and economy as a priority. The U.S. is trying to ascertain the economic impact the Kyoto protocol would have on its fossil fuel industries. This position complicates Canada's efforts, especially in light of the current North America energy situation, which puts pressure on Canada to develop more energy sources in the North and offshore.

Issues related to water have lately been at the forefront of public and media attention. These issues include bulk water removals, contamination of surface and groundwater resources, changing water levels in the Great Lakes and St. Lawrence Basin, sustainable management of watersheds, catastrophic floods, and will likely continue to be a growing concern both domestically and internationally. The recent outbreak of *E. Coli* in Walkerton, Ontario is one issue that has polarized public opinion into believing how our potable water sources are increasingly being threatened by agricultural or other human activities. In addition, climate change is also predicted to have significant impacts on the sustainability of Canadian water resources.

Other issues of international importance include trade liberalization, good governance, democracy and human security. In the spring of 2001, the 34 democratically elected heads of government from North, Central and South America and the Caribbean gathered in Quebec City for the third Summit of the Americas. This summit continued the discussions that began with a commitment to collective action in Miami in 1994 and continued with a broadening of hemispheric cooperation in Santiago in 1998.

Discussion focused on three priorities: strengthening democracy, creating prosperity, and realizing human potential. Canada emphasized connectivity at the Summit, and the role that information and communication technologies can play in helping to achieve goals related to connectivity. As technological links between nations are fostered, the links of cooperation and friendship will also grow.

At the Summit, Canada also pressed for a Free Trade Agreement of the Americas. This position reinforces Canada's emergence, over the past decade, as an international trading powerhouse. Canada acquires over 43 percent of its Gross Domestic Product (GDP) from exports and more than a third of Canadian jobs are linked to international trade. Since domestic prosperity and stability are linked to what is happening around the world, Canada is committed to working for democracy, social justice and economic progress abroad. Canada is also an advocate of fair trading rules to protect public health care, public education and culture. These international policy discussions continue to influence, and are a reflection of, the trend towards increased globalization and integration of national economies.

Canada is also participating in the international preparations for the World Summit on Sustainable Development to be held in Johannesburg, South Africa in September 2002. To reinvigorate, at the highest political level, the global commitment to sustainable development, the UN General Assembly called for the presentation of a 10-year review of progress achieved on actions recommended in the United Nations Conference on Environment and Development (UNCED) Agenda 21 and UN Conventions. NRCan and Environment Canada are developing initiatives that Canada will put forth at this Summit. Part of the preparations will also require a comprehensive assessment of progress achieved in the implementation of Agenda 21.

Earth Sciences Sector

Earth Science Sector (ESS) programs and policies support federal government priorities as well as the goals and objectives of Natural Resources Canada. NRCan's new action plan will guide the Department's and ESS' activities for the current mandate. Entitled *A Sustainability Agenda for the 21st Century*, this action plan reinforces NRCan's commitment to sustainable development. This commitment puts into practice NRCan's sustainable development mandate and responds to the Government of Canada's goals to provide opportunity and quality of life for all Canadians.

The goal of NRCan's sustainability agenda is a higher quality of life for all Canadians through globally-recognized leadership in the sustainable development and wise use of Canada's landmass and resources. To achieve this goal NRCan has identified four strategic objectives, which address the government's priorities for innovation, healthy people and a healthy environment, vigorous communities and proud citizenship at home and abroad. The NRCan objectives are:

- creating and sharing knowledge for balanced decisions about Canada's landmass and resources;
- positioning Canada's natural resource sector as a world leader in innovation;
- establishing Canada as a global model for resource stewardship and environmental responsibility; and
- fostering adaptable and sustainable communities.

The ESS Strategic Plan (2000 – 2005) continues to provide the framework for the Sector's alignment with government's priorities and long term goals. The Sector's goals are to:

- provide geospatial and geoscientific knowledge on Canada for sound economic, environmental and social decisions;
- provide geospatial and geoscientific knowledge to help develop and sustain economic and social benefits;
- provide geospatial and geoscientific knowledge to minimize the impacts of land use, natural resource development and climate change;
- provide geospatial and geoscientific knowledge to enhance the safety and economic security of Canadians; and
- ensure that the Earth Sciences Sector is a forward-looking, rewarding, and effective and efficient workplace, and that it meets the needs of its clients.

The Plan positions the Sector as a leading provider of on-demand, easily accessible and integrated earth science knowledge. The integrated knowledge will be built on the national geoscience knowledge base and national geospatial infrastructure.

The Plan emphasizes integrated earth science contributions to strategic issues such as climate change, resource sector competitiveness, environmental and natural hazards monitoring, disaster information management, emergency response, and community capacity-building. ESS will achieve these goals and objectives by:

- emphasizing multi-disciplinary research and the integration of data and information from different sources (including satellite and ground-based sources);
- providing Internet access to data, information and knowledge through GeoConnections and ResSources;
- contributing knowledge and information tools to support policy decisions;
- building new partnerships, networks and strategic alliances to better undertake S&T activities and deliver services; and
- promoting flexibility and synergy within ESS and building on the excellence of the staff.

The Sector will increase its activity on priorities identified in the following areas:

- providing integrated geospatial frameworks;
- enhancing management of and access to earth sciences knowledge;
- undertaking climate change science, impacts and adaptation research;
- establishing a national program in groundwater studies;
- building the capacity of rural, remote and Aboriginal communities;
- safeguarding Canadians from natural hazards; and
- supporting emergency and disaster response efforts.

ESS continues to evaluate its programs in light of evolving government and departmental priorities, and the many forces shaping its operating environment. The Sector also examines its processes and practices, as well as its S&T capacity needs to ensure that it is well-positioned to respond to emerging policy issues and government priorities, and that it continues to deliver world class science and technology.

An important element in this examination involves an ongoing review of the Sector's S&T capacity. Two recent studies by the Committee of S&T Advisors (CSTA) have confirmed the role of federal S&T and the need for federal S&T capacity. In the spring of 1999, the CSTA released its report *Science Advice for Government Effectiveness* (the SAGE report). The government responded with *A Framework for S&T Advice* that provides guidance on how to ensure that government decisions are informed by sound science advice. CSTA's second report in the fall of 1999, *Building Excellence in Science and Technology* (the BEST report) addressed the role of government in S&T and its capacity to deliver. This report identified three fundamental principles to ensure excellence in government science and technology: alignment with departmental and government priorities; linkages with other activities within the federal government, universities, private sector and the global pool of knowledge; and excellence achieved through openness, transparency, and regular and appropriate expert review. ESS is currently developing an action plan for the implementation of the BEST report recommendations.

In parallel, ESS together with the other NRCan sectors has, through a combination of forward-looking strategic planning and assessment of current needs, identified significant gaps in their ability to deliver the S&T programs, both presently and those that are anticipated. The gaps fall into three principal areas:

- skills shortfalls as large numbers of senior managers, scientists, technologists and technical support staff become eligible for retirement in the next 5 – 10 years;
- deteriorating physical infrastructure; and
- aging and obsolete equipment.

Science Policy

Substantial opportunities exist for the Sector, and the earth sciences in general, as the recognition of their contribution to public and private sector decision-making increases. A number of key science-policy issues that are demanding S&T leadership and expertise include:

- sustainable resource development, including the provision of a geological database for mineral and energy exploration and exploitation, particularly in the frontier regions of the North and offshore;

- supply of potable water (particularly groundwater);
- climate change impacts and adaptation;
- public health and safety (e.g. natural hazards mitigation; toxic substances and contaminants in the environment; waste management);
- environmental protection;
- land use and landscape management;
- coastal zone and offshore management (*Oceans Act*, Marine Protected Areas);
- innovation to increase the productivity and global competitiveness of Canadian geomatics and geoscience industries;
- development of precise positioning applications such as intelligent transportation systems;
- Canadian sovereignty in offshore areas and the North (e.g. Law of the Sea);
- evolution in governance due to the negotiation of Aboriginal self-government agreements and devolution in the territories;
- northern science and technology;
- capacity-building in Aboriginal, rural and northern communities; and
- transformation of the national infrastructure to take advantage of satellite, telecommunications and information technology.

ESS provides S&T leadership and expertise on these important science-policy issues. The increasingly complex nature of issues and of science and technology is resulting in the development of ever-stronger partnerships, networks and strategic alliances within the national and international earth sciences community. ESS continues to develop multi-stakeholder relationships with the provinces and territories, universities and industry on program delivery (e.g. the Intergovernmental Geoscience Accord, Intergovernmental Geomatics Accord), and information dissemination (e.g. National Atlas, GeoConnections). ESS is working in partnership with the provinces, territories and other federal departments to develop the National Groundwater Strategy. Through innovative partnerships, networks and strategic alliances, ESS is contributing to efforts now underway for continued rapid growth in technological capabilities for the acquisition, management, analysis and dissemination of earth science information through the Internet and other media.

2. Earth Sciences Sector: Major Components and Financial Summary

The Earth Sciences Sector (ESS) is Natural Resources Canada's (NRCan's) largest Sector. It comprises Geomatics Canada, the Geological Survey of Canada, Polar Continental Shelf Project and ESS Corporate Services.

Earth Sciences Sector Funding by Major Component

	2001/2002	2002/2003	2003/2004
Geomatics Canada	104 869	103 540	104 292
Geological Survey of Canada	73 386	72 120	66 612
Polar Continental Shelf Project	3 707	3 957	3 707
ESS Corporate Services	22 941	22 774	22 773
Total ($000)	**204 903**	**202 391**	**197 384**

(ESS Corporate Services includes the ADM's Office; the Business Development Office; the Chief Scientist Office; ESS Communications; Policy, Planning and Coordination Division; ESS Info Division; the Quality Management Office; Senior Advisors; the Sector Financial Advisor Office; Human Resources; and Management and Administrative Services Division.)

ESS is committed to delivering its program and regulatory responsibilities in partnership with clients and stakeholders in other federal departments, the provinces and territories, the private sector and academia. To ensure the comprehensive representation of client requirements, the department has established the Minister's National Advisory Board on Earth Sciences (MNABES) to advise the Minister of Natural Resources on the Sector's scientific and program directions.

To achieve the vision expressed by the Minister, and pressures on resources available from traditional sources of funding, the Sector is actively developing alternative sources of funding. ESS fosters a strong relationship with its stakeholders, both internal and external to the government, by signing cost-sharing arrangements to develop joint projects. The Sector also sells products and provides consulting and technical services, both domestically and internationally, on a cost-recovery basis. The following tables summarize the funding received from those alternative sources on a cash basis and indicate appropriation funding by expenditure category.

Earth Sciences Sector Funding Mechanisms

	2001/2002	2002/2003	2003/2004
Appropriation from Parliament	166 268	165 669	161 522
Vote netting	2 830	2 830	2 830
Revolving Fund	17 293	17 293	17 293
Joint projects with external parties	5 208	4 272	3 971
Joint projects with other federal departments	13 304	12 327	11 768
Total ($000)	**204 903**	**202 391**	**197 384**

(Except for appropriation from Parliament, figures represent targets to be met by ESS managers.)

Earth Sciences Sector Appropriation by Major Category of Expenditure

	2001/2002	2002/2003	2003/2004
Salaries	75 104	75 072	74 655
Employee benefits plan	14 645	14 639	14 559
Operating expenses, including capital	68 518	68 124	63 676
Grants and contributions	5 171	5 004	5 804
Total ($000)	**163 438**	**162 839**	**158 694**

Geomatics Canada

Geomatics Canada (GC) programs underpin key federal government policy objectives, including knowledge infrastructure, promotion of jobs, sustainable development, and health and safety. They support a wide range of activities of national interest. These activities include maintaining Canada's borders; regulating and surveying Canada Lands; providing the national surveying, spatial positioning and mapping fabric; developing national scale maps; and collecting and managing a growing volume of digital data. GC also provides leadership in the use of topographic map information, Global Positioning System (GPS) technology and remote sensing applications.

GC uses a Revolving Fund (RF) to respond to external demands for its products and services. An important strength of the RF is that it directly supports NRCan's commitment to reduce the subsidization of the department's commercial products and services by implementing user fees sufficient to recover costs. The RF aims to be self-sufficient. However, unlike commercial businesses—which strive for maximum profits—the Revolving Fund's target is to achieve a zero balance. Each year, GC produces a separate Geomatics Canada Revolving Fund Business Plan.

The following organizations deliver GC programs:

Geodetic Survey Division

The primary role of the Geodetic Survey Division (GSD) is to establish, maintain and improve the Canadian Spatial Reference System (CSRS) and to facilitate access to this national standard in accordance with evolving client needs and advances in technology. From geomatics and navigation to natural resources and the environment, this national infrastructure and other related standards serve as a reference, allowing users to exchange and merge spatial information seamlessly. The CSRS ensures that spatially referenced information from federal, provincial, municipal and private sources is compatible and is therefore fundamental to initiatives such as GeoConnections.

As economies throughout the world become more dependent on information technologies, it becomes necessary to ensure a globally consistent national reference for spatial positioning and related applications. GSD's role in the International GPS Service (IGS), the International VLBI Service (IVS) and international gravity programs serves Canadian S&T and ensures global consistency of national spatial reference standards. Active control system technologies now form the basis of the geodetic program. In this era of space-based positioning, GSD has adapted its operations to permit eventual widespread access to the reference system.

Legal Surveys Division and the International Boundary Commission

Under the *Canada Lands Surveys Act* and related legislation, the Surveyor General and the Legal Surveys Division (LSD) are responsible for the Canada Lands Survey System. This responsibility includes regulating legal surveys; maintaining a publicly accessible archive of survey documents and information; surveying Canada Lands, including Aboriginal land claims; and protecting the interests of the Government of Canada with respect to these lands. The International Boundary Commission (IBC) is an integral part of LSD and is jointly responsible, with its American counterpart, for maintaining the boundary between Canada and the United States and assuring its accurate depiction on official maps.

In the 2000/2001 fiscal year, LSD received a $1 million transfer from the Treasury Board of Canada (TBS), Secretariat Program Integrity initiative to support its ongoing but underfunded program activities. It is hoped that this funding will continue in 2001/2002 as LSD's financial needs remain acute.

Canada Centre for Remote Sensing

The Canada Centre for Remote Sensing (CCRS) is internationally recognized as a leading centre of excellence in the use of earth observation data, and supports an expanding industry sector that includes world leaders in global ground station, image analysis and radar mapping markets. CCRS receives, processes, archives and disseminates remotely sensed data for Canada. In conjunction with the private sector, it develops remote sensing technology and applications. Through its National Atlas of Canada team, CCRS also works with industry to develop spatial information applications. CCRS is developing the Canadian Earth Observation Network (CEONet) component of the Canadian Geospatial Data Infrastructure (CGDI) to provide users with real-time access to remote sensing satellite and other spatial databases, both land and marine, through the Internet.

In addition, the GeoAccess Division of CCRS has become the lead agency for the implementation of CGDI as well as the ESS coordinator for the GeoConnections initiative. As part of this commitment, the GeoAccess Division will provide secretariat services to the CGDI. GeoConnections is a national partnership program aimed at making

Canada's geographic information accessible on the Internet. It will involve many implementation projects to develop the Canadian Geospatial Data Infrastructure (CGDI) with federal, provincial/territorial, municipal and private sector and academia agencies. GeoConnections programs involve working with partners to develop framework data, facilitate the sharing of data, accelerate technology development and develop the National Atlas of Canada.

Mapping Services Branch

The Mapping Services Branch (MSB) provides Canadians with topographic and toponymic information to support the sustainable development and utilization of national resources and the Canadian territory. It accomplishes this in part by producing topographic products that include paper maps, aerial photography and topographic information in digital format. The Branch supports the activities of the Geographical Names Board of Canada (formerly the Canadian Permanent Committee on Geographical Names) by providing a secretariat and maintaining the Canadian Geographical Names Data Base (CGNDB).
MSB also provides the critical aeronautical information essential to the safety and efficiency of aviation in Canada and provides cartographic and printing services to the Government of Canada.

In 2000-2001, a new vision was developed for the Centre for Topographic Information (CTI) to align itself with GC, ESS and NRCan goals: by 2005, *CTI will maintain the national topographic component of the Canadian Geospatial Infrastructure (CGDI) and provide access to all Canadians.* The components of the vision include: quality topographic information to identify, represent and communicate changes to the Canadian topography; data is captured once, closest to the source, and used by many, and; products, services and tools allowing for the basic exploitation of Canada's topographic information.

Aeronautical and Technical Services (ATS) is responsible for the production and distribution of aeronautical charts and publications, which contribute to the protection of public safety for those flying in Canadian airspace. With safety being the number one requirement, the Division must respect strict delivery cycles for revised charts and publications. These products are used throughout the aviation industry and the Department of National Defense (DND) in Canada.

Cartographic Imaging and Printing Services is part of ATS and provides digital publishing capabilities used by divisions of the Branch, the Sector and other government agencies. It promotes the use of its services as a cost-effective alternative to the client purchasing their own imaging and map printing capability. It will also assist other agencies by digitally preserving, converting and restoring their inventories of intellectual property stored on film.

Geomatics Canada Funding Mechanisms

	2001/2002	2002/2003	2003/2004
Appropriation from Parliament	74 951	74 500	75 352
Vote netting	0	0	0
Revolving Fund	17 293	17 293	17 293
Joint projects with external parties	1 797	1 269	1 169
Joint projects with other federal departments	10 828	10 478	10 478
Total ($000)	**104 869**	**103 540**	**104 292**

Geological Survey of Canada

The Geological Survey of Canada (GSC) is aligned with NRCan's long-term goals and key ESS objectives. Work is carried out under six broad programs: Bedrock Geoscience; Surficial Geoscience; Marine Geoscience; Hydrocarbon Geoscience; Minerals Geoscience; and Geological Hazards and Environmental Geoscience. Much of the output of these programs is made publicly available through the cartographic and publishing activities of the Geoscience Information Program provided by the Earth Science Sector Information Division (ESS Info).

The Bedrock and Surficial Geoscience programs provide the national geoscience knowledge framework that underpins all private and public sector activities related to the sustainable development of Canada's onshore mineral, energy, water and other resources. This knowledge is used to make decisions about land use and public health and safety issues linked to natural hazards. The Marine Geoscience Program provides the same knowledge framework for Canada's offshore areas and supports Canada's offshore sovereignty and territorial claims. The Hydrocarbon and Minerals programs develop models that describe the formation of economically recoverable resources. This research provides new guidelines and technologies for exploration, which not only help maintain robust mining and energy resource industries in Canada, but also underpin the assessment of resource potential in areas scheduled for development or designation as parks. The Geological Hazards and Environmental Geoscience Program seeks, through research and monitoring, to reduce risks from earthquake and geomagnetic hazards, landslides, global climate change, natural release of metals and other hazards in the environment.

Seven divisions in the Minerals and Regional Geoscience Branch and the Sedimentary and Marine Geoscience Branch deliver the components of GSC's scientific program. Each division has primary responsibility for a specific science component carried out on a national scale (for example, minerals). Activities in the four regional divisions span several science program components that apply to that region.

Minerals and Regional Geoscience Branch

The Minerals and Regional Geoscience Branch comprises the Continental Geoscience Division and the Mineral Resources Division, both located in Ottawa, and GSC Pacific, with offices in Sidney and Vancouver (British Columbia) and in Ottawa.

Continental Geoscience Division

The Continental Geoscience Division provides comprehensive knowledge about the bedrock geology of the Canadian landmass, with emphasis on the Canadian Shield, including knowledge about its architecture and tectonic history. It does so by integrating information from bedrock mapping, geophysical surveys, and geochronology and related studies. Bedrock mapping documents the nature of the earth's crust and its physical geology; geophysical surveys reveal the nature of the earth's crust at depth and its physical rock properties; and geochronology and related studies unravel the time and space dimensions of earth history. The Division also contributes to the national geoscience knowledge base by developing methodologies and standards for digital integration, analysis, and dissemination of diverse data sets and knowledge bases.

Mineral Resources Division

The Mineral Resources Division provides comprehensive knowledge of Canada's mineral resources, develops and tests new concepts and methods for mineral exploration, and provides mineralogical and chemical expertise and services. The Division undertakes systematic geochemical surveys, which constitute the National Geochemical Reconnaissance, and conducts multi-parameter airborne geophysical surveys. As well, it provides information relating to the natural distribution of environmentally significant elements.

GSC Pacific

GSC Pacific is responsible for national programs to monitor seismicity, to establish earthquake hazard zonation and to monitor changes in the earth's magnetic field. Underground nuclear explosions are monitored for compliance under the Comprehensive Test Ban Treaty at several seismic stations. The active tectonic growth of the Pacific margin through plate convergence is unique in Canada. Monitoring its ramifications for natural hazards and mineral wealth offshore and in the Cordilleran mountain system is part of GSC Pacific's responsibilities.

Sedimentary and Marine Geoscience Branch

The Sedimentary and Marine Geoscience Branch comprises the Terrain Sciences Division (Ottawa), GSC Atlantic (Dartmouth), GSC Quebec (Sainte-Foy) and GSC Calgary.

Terrain Sciences Division

The Terrain Sciences Division provides comprehensive knowledge of the surficial geology and geomorphic processes of the Canadian landmass. Current activities include applied surficial geology studies, hydrogeological studies of key Canadian aquifers, research on permafrost and gas hydrates, development of mineral exploration methods and environmental geochemistry. The Division also provides geoscience information on natural and human-induced geological processes and hazards that may adversely affect sustainable development, and public health and safety.

Additionally, by monitoring current environmental conditions and evaluating past environmental change, the Division collects baseline information to model, explain and assess potential global changes, including changes in climate. It houses the Climate Change Impact and Adaptation Liaison Office of the Climate Change Action Fund.

GSC Atlantic

GSC Atlantic carries out coastal and offshore geoscientific surveys and provides expert geological, geophysical, geochemical and geotechnical information on the coastal zone, the seabed, offshore sedimentary basins and geological processes. The Division also helps assess resources, hazards and environmental quality for the East Coast and Arctic regions and the contiguous ocean basins. This knowledge base was recently applied to delineate Canada's offshore boundaries under the United Nations Convention on the Law of the Sea. (NCLS).

GSC Quebec

GSC Quebec provides comprehensive knowledge about the geology of the Laurentian Margin (Grenville and Appalachian geological provinces) and the Quaternary geology of eastern Canada. Integrated and multidisciplinary research activities contribute to the Minerals Geoscience Program and the Geological Hazards and Environmental Geoscience Program. The Division is also responsible for the GSC hydrogeology initiative.

In 1988, following an agreement between the Institut national de la recherche scientifique (INRS) (a branch of the Université du Québec), the GSC, INRS-GéoRessources and GSC Quebec formed a joint research centre. This partnership brings together GSC scientists and university researchers and allows strong collaboration with the provincial government and private corporations.

GSC Calgary

GSC Calgary provides comprehensive knowledge, technology and expertise related to national resource estimates for oil, gas and coal, as well as the geology and resource potential of the sedimentary basins of western and northern mainland Canada, the Arctic islands and adjacent offshore regions. The Division serves as GSC's national centre for research in palaeontology, coal and organic geochemistry.

Geological Survey of Canada Funding Mechanisms

	2001/2002	2002/2003	2003/2004
Appropriation from Parliament	65 047	65 066	60 068
Vote netting	2 552	2 552	2 552
Revolving Fund	0	0	0
Joint projects with external parties	3 411	3 003	2 802
Joint projects with other federal departments	2 376	1 499	1 190
Total ($000)	**73 386**	**72 120**	**66 612**

Polar Continental Shelf Project

Polar Continental Shelf Project (PCSP) coordinates logistics support and provides related assistance to advance scientific knowledge of the Arctic region and to help Canada exercise its sovereignty in that region and its adjacent waters. By providing a comprehensive coordination, transportation, communications and logistics support infrastructure, PCSP ensures its clients maximum physical safety and scientific productivity.

Research supported by PCSP has helped Canada develop a national knowledge base related to more than one third of the Canadian landmass and has contributed to sustainable development in the North. PCSP support has resulted in the identification of mineral and hydrocarbon deposits and has contributed to a better understanding of the human and environmental impacts of development, and of the northern environment's impact on infrastructure development.

As government agencies move toward implementing a northern S&T strategy to more effectively coordinate research priorities and programs, PCSP serves as an excellent example of the cost effectiveness and efficiencies of horizontally managing a program portfolio across departments and client agencies. PCSP is working in partnership to provide this support to both Canadian universities and other government agencies—including the Canadian Coast Guard of the Department of Fisheries and Oceans (DFO), DND and northern agencies—to maximize the use of their collective resources for the benefit of the northern scientific community. PCSP also promotes partnerships with its scientific client groups through formal and informal joint venture activities, and seeks to extend its services by sharing costs with and recovering expenditures from partners and clients.

PCSP supports not only government and university research in the Arctic, but also community-based traditional knowledge studies and programs conducted by resource co-management boards established under northern land claims agreements. PCSP also provides services to non-Canadian research groups on a full cost-recovery basis and promotes bi-polar scientific exchanges through the Canadian Arctic–Antarctic Exchange Program in partnership with DFAIT.

Polar Continental Shelf Project Funding Mechanisms

	2001/2002	2002/2003	2003/2004
Appropriation from Parliament	3 607	3 607	3 607
Vote netting	0	0	0
Revolving Fund	0	0	0
Joint projects with external parties*	0	0	0
Joint projects with other federal departments*	100	350	100
Total ($000)	**3 707**	**3 957**	**3 707**

*Actual/Estimated recoverable expenditures from partners and clients

Earth Sciences Sector Corporate Services

Policy, Planning and Coordination Division

The Policy, Planning and Coordination Division (PPCD) provides leadership and a central focus for the policy and planning and coordination functions of the Sector.

The Division provides corporate support to ESS in the areas of strategic direction, policy development, analysis and coordination, and intergovernmental relations. The Division also recommends strategic directions and policy options for ESS, a responsibility that includes preparing input to planning and reporting documents for NRCan, Treasury Board of Canada, Secretariat and Parliament. PPCD manages mechanisms linking ESS to stakeholders, including the Canadian Council on Geomatics (CCOG), the Minister's National Advisory Board on Earth Sciences (MNABES), and the GeoConnections Management Board. It maintains the Cabinet and Parliamentary Affairs Secretariat and provides secretariat support and departmental representation for various ESS and departmental initiatives. PPCD is also coordinating the Sector's initiative to document and communicate the impact and value of its programs. The Division is implementing the Sector Project System and developing a Sector-wide, systematic approach to management.

ESS Info Division

ESS Info Division provides leadership and a central focus for the information functions of the Sector. It provides library services through the Earth Sciences Information Centre (ESIC), where it maintains a comprehensive collection of geoscience information for Canadians. It publishes and distributes GSC's scientific output. It also provides a comprehensive digital map production service using leading-edge mapping and Geographic Information System (GIS) software, digital imaging and photographic technologies. It further develops and manages the information technology infrastructure and client services in the area of geoinformatics, while providing advice on informatics policy, planning and the application of technology. The Division also manages the Sustainable Communities Initiative, aimed at developing the ability of communities to use geospatial data and information technology for community planning purposes.

Until now, the Internet has been an excellent communication tool for the dissemination of scientific and technical information. The ESS Government Online Office assist and provide guidance to employees and managers of the Sector with the Government Online Initiative. Through partnerships with various levels of public and private organizations, the goal is to put S&T information online to create knowledge about earth sciences for the benefit of Canadians.

Management and Administrative Services Division (MASD)

Management and Administrative Services Division (MASD) delivers administrative services to the Sector, including services related to facilities, telecommunications, security, asset management, shipping and mail, records, health and safety, and Access to Information Program (ATIP) requests. It provides logistical support to field projects through the Technical Field Support Services group, and provides financial services to GC, the GSC and ESS Corporate Services groups. These financial services include procurement, accounts payable and receivable processing, both in Appropriation-based (A-Base) and Revolving Fund activities, and administration of field and travel accounts. The Division also provides services related to human resources, such as planning, training, renewal and development programs. Key activities include performance management, staff and management development, and implementation of the ESS Recruitment, Retention and Rejuvenation Strategy, Awards and Recognition, and the Geomatics Professional Development Program (GPDP).

Human Resources

The NRCan Corporate Services Sector has assigned the Human Resources Operations Unit (HROU) to provide services, advice and guidance concerning classification, staffing, staff relations, official languages and workforce adjustment. HROU ensures that ESS takes a coherent approach to staffing and classification and provides support for employer–employee relations.

The ESS Human Resources Planning, Development and Renewal component rests with the Management and Administrative Services Division (MASD) that offers services related to planning, renewal of human resources and professional training programs. MASD's main priority is to help ESS managers lead, motivate, develop and empower their employees so that employees can realize their full potential while delivering services.

Human Resources Advisor

As a member of the ESS management team the Sector HR advisor works with senior management to develop and implement strategic hiring initiatives.

Business Development Office

The Sector's Business Development Office was established to provide business leadership to the Sector and the Canadian earth sciences community. It provides a common framework for consistent business practices to manage ESS programs effectively and efficiently, and promotes Canada's earth sciences capability nationally and internationally.

The Business Development Office is made up of two teams. The Business Relations team is responsible for international business development, and coordinates and monitors trade and investment issues. It also coordinates incoming and outgoing trade and investment missions, the Sector exhibits committee, and provides leadership in the implementation of the ESS International Business Strategy.

The Business Management team provides direction and leadership to the Sector in its business processes and activities. In particular, it focuses on planning, policy development, management of the Geomatics Canada Revolving Fund, performance measurement, service quality initiatives, development and administration of contracts and agreements, business communications and evaluations of ESS compliance with business processes. The principal deliverables of the team include the ESS Business Plan, consistent with where we are going not where we have been, the ESS Price List, the Business Opportunities Bulletin, the management of the Revolving Fund, ESS External Standards, as well as guidelines for the measuring client satisfaction and managing intellectual property.

Chief Scientist Office

The ESS Chief Scientist provides leadership and advice to the Sector on matters related to the quality and integrity of ESS science, and is the Sector's principal interface with external scientific organizations and scientific programs. The Office remains abreast of national and international geoscience trends and developments; identifies issues, opportunities, synergies and cooperation; and provides the voice of the ESS science community at the management table.

The Chief Scientist will take a key role in:

- defining future scientific and other activities in the Sector;
- stimulating synergy across ESS and with other organizations;
- ensuring excellence in S&T in ESS;
- representing ESS on issues related to S&T within and outside NRCan and the government; and
- being the senior S&T advisor to the ADM.

One of the key tasks the Chief Scientist will undertake in 2001/2002 is the development of a long-term (10-20 year) blueprint for ESS 2021. The Chief Scientist will hold a series of consultation sessions within the Sector as a starting point for developing this long-term vision and plan. Consultations will expand to include external stakeholders. This process will examine the gaps between our current status as a Sector and where we need to be in 10-20 years. It will also define an action plan to fill identified gaps, and get ESS to 2021.

Quality Management Office

The Quality Management Office provides leadership and advice to the Sector on quality management and management improvement activities. Working closely with the NRCan Excellence Office, the Advisor remains abreast of trends and developments in quality management practices in the private sector and in government, both in Canada and in other countries. This knowledge is used by ESS management to identify, plan and carry out management improvement initiatives. The Office, with the A/ADM will create the plan and schedule for ensuring ESS is, and continues to be, a high performance organization.

Using the ESS management framework and the NRCan *Guide to Good Management* the office guides ESS managers in the analysis of management activities against an established set of criteria, develops improvement plans and reports against the framework. News of progress with the Sector, the department and the government is shared by posting a biannual report on quality projects on the Internet.

Working with ESS management teams, a quality approach to management is developed and deployed. Activities include conducting the ESS Employee Survey, assisting with various customer and client measurement initiatives, and helping implement ISO 9000 initiatives.

ESS Communications

ESS Communications provides strategic advice and services to ESS to support external public relations activities and internal communications. The Office consists of the GSC Communications Officer, the Geomatics Communications Officer, the Ministerial and Special Events Officer, and the Senior Communications Manager. ESS Communications is closely linked to NRCan's Corporate Communications Branch through the Sector Strategic Communications Committee (STRATCOM), the Millennium and S&T Communications committees, and numerous other ad hoc committees.

ESS Communications ensures that strategies and guidelines exist for the internal communication of governmental priorities and initiatives. It also identifies key external audiences and opportunities for communicating the range and value of ESS programs.

Sector Financial Advisor Office

The Sector Financial Advisor Office (SFAO) is tasked by the NRCan Corporate Services Sector to assist with the Sector's financial planning, modernization of comptrollership, ESS financial management, and the provision of financial advice and expertise to support the formulation of business cases in line with the strategic vision and management framework of ESS. The SFAO ensures a departmental approach to financial reporting and management and provides support to the GC Revolving Fund management team. It will also introduce a comprehensive approach to costing within ESS.

As a member of the ESS management team, the Sector Financial Advisor implements the ESS management framework within the SFAO, particularly in the areas of client satisfaction, process improvement and human resources.

Earth Sciences Sector Corporate Services Funding Mechanisms

	2001/2002	2002/2003	2003/2004
Appropriation from Parliament	22 663	22 496	22 495
Vote netting	278	278	278
Revolving Fund	0	0	0
Joint projects with external parties	0	0	0
Joint projects with other federal departments	0	0	0
Total ($000)	**22 941**	**22 774**	**22 773**

(ESS Corporate Services includes the ADM's Office; the Business Development Office; the Chief Scientist Office; ESS Communications; Policy, Planning and Coordination Division; ESS Info Division; the Quality Management Office; Senior Advisors; the Sector Financial Advisor Office; Human Resources; and Management and Administrative Services Division.)

3. Earth Sciences Sector: Goals, Objectives and Performance Measurement

The ESS Business Plan outlines what the Sector intends to achieve during the three-year planning period and how it will assess its performance. This year ESS has described its plan around the department's goals and objectives, as well as the ESS Objectives developed in the ESS Strategic Plan for 2000-2005.

Earth Sciences Sector Links to Natural Resources Canada Goals

The following table illustrates the link between NRCan's goals and those of the Sector

NRCan Policy Goals	ESS Goals
1. To enable Canadians to make balanced decisions regarding natural resources.	1. Provide geospatial and geoscientific knowledge on Canada for sound balanced economic, environmental and social decisions.
2. To sustain the economic and social benefits derived from natural resources for present and future generations.	2. Provide geospatial and geoscientific knowledge to help develop and sustain economic and social benefits.
3. To manage the environmental impacts of natural resource development and use.	3. Provide geospatial and geoscientific knowledge to minimize the impacts of land use, natural resource development and climate change.
4. To contribute to the safety and security of Canadians.	4. Provide geospatial and geoscientific knowledge to enhance the safety and economic security of Canadians
5. To manage the department efficiently and effectively.	5. Ensure that the Earth Sciences Sector is a high performance forward-looking, rewarding, and effective and efficient workplace, and that it meets the needs of its clients and stakeholders.

NRCan Goal One: To enable Canadians to make balanced decisions regarding natural resources.

ESS Goal 1: Provide geospatial and geoscientific knowledge on Canada for sound economic, environmental and social decisions.

Earth Sciences Sector
Appropriation funding by objective ($ 000)

ESS Goal 1	2001-2002	2002-2003	2003-2004
1.1: Positioning Knowledge	9 152	9 153	9 153
1.2: Geographic Knowledge	28 330	24 209	25 009
1.3: Geoscience Knowledge	22 608	21 323	21 323
1.4: Cadastral Survey Framework	5 740	5 736	5 736
1.5: Resource Assessments	495	1 070	1 070
1.6: Knowledge Access and Management	24 897	30 026	32 026
Total	**91 222**	**91 517**	**94 317**

1.1: Positioning Knowledge: Maintain and enhance the geodetic infrastructure and the knowledge base for the national standard for spatial referencing in Canada.

- Canadian Spatial Reference Standard
- Global Standards

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Enhance, maintain and deliver the Canadian Spatial Reference System (CSRS) as a globally consistent national standard using active control technologies, gravimetry and advanced geodetic concepts. Maintain and improve the accuracy and delivery of the Canadian Active Control System (CACS) services. Maintain linkages with national R&D programs, international services and foreign government institutions in geomatics and global dynamics.	All deliverables from year one are ongoing with increasing focus as noted: Research and develop techniques and applications related to space based positioning, geoid modelling and Very Long Baseline Interferometry (VLBI). Put Canada-wide integrated networks in place for precise applications.	Maintenance of an accurate and consistent national spatial reference framework. Linkages in place with International VLBI Service (IVS), Int'l GPS Service (IGS), Int'l Earth Rotation Service (IERS), Int'l Geoid Service (IGeS), Int'l Gravity Bureau (IGB), Global Geodynamics Project (GGP). Level of participation in global geodetic services. Extent of collaboration with the US towards coordinated spatial reference frame development.
Participate in international space geodetic and gravity services and networks to maintain and enhance international terrestrial reference system standards and global geodynamics. Participate in the collaborative development of a consistent North American spatial reference frame. Improve the geoid model to facilitate use of GPS for height determination particularly in remote regions of Canada.	Ongoing.	Upgraded accuracy of the geoid model.
Participate in international space geodetic and gravity services and networks to maintain and enhance international terrestrial reference system standards and global geodynamics.	Continue leadership in global real-time operations interfaces.	Acceptance of GPS, VLBI and gravity data from Canadian stations by international programs.

1.2: Geographic Knowledge: Provide reliable, up-to-date geographical information and services.

- Access to Geospatial Information
- Information Dissemination Through GeoConnections
- National Topographic Data Base
- Integrated Data Through Partnerships
- High-resolution Satellite Data
- Integrated Geospatial Information Products
- Global Positioning System Correction System

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Provide the first 200 cloud free Landsat images on GeoGratis. Publish a revised version of the Canadian	Provide 550 Cloud free Landsat-7 images on GeoGratis	All scenes accessible by the end of 2002/2003.

Conservation Areas Database.		
Develop a matrix that shows which Satellite sensors provide better information for different applications.	Project completed.	Number of organizations downloading the information applications matrix.
Produce a CD-ROM of course material for advanced radar analysis.	Project completed.	Number of universities using advanced random analyses as course material in their curricula.
Continue reception, archiving, portrayal and dissemination of multi-mission satellite data and provision of all browser and metadata to CEOcat/CEONet. An on-line display of data to senior management.	Continue reception, archiving and dissemination of multi-mission satellite data and provision of all browser and metadata to CEOcat/CEONet.	Availability of 99.5 percent of multi-mission satellite data received.
Complete the development of the new European satellite ground segment and provide near-real time products to the Canadian Ice Services and other federal Government clients by electronic on-line delivery.	Provide European satellite data services to commercial distributing entities and establish the ground reception capabilities for Canadian RADARSAT-2.	Near-real time products are available to all Canadians.
R&D activities in collaboration with partners on the topics of digital topographic databases, cartographic visualisation on the internet and imagery/photogrammetry.	R&D activities in collaboration with partners on the topic of digital topographic databases, cartographic visualisation on the internet and imagery/ photogrammetry.	Innovation in the development of new processes, products and services. Number of new and potential business partners.
As part of a three-year process, design the first generation of new mapping representations from the Geospatial Data Base (GDB).	Design the second generation of mapping representation of the GDB.	A new digital product for Internet, and printable.
Develop an automated mapping process to generate the first generation of map representation products from the GDB.	Develop an automated mapping process to generate the second generation of map representation products from the GDB.	First generation map representation products from the GDB available to Canadians by 2002.
Design, develop and implement the new distribution model.	Continuous improvement of the distribution model to increase access by Canadians.	Distribution model completed by 2002 and map products available to all Canadians.
Scan the National Topo Series (NTS) 1:50 000 maps of the North that are currently not available in digital format, approx. 5000 sheets.	Project completed.	Number of maps scanned. Revenues from direct sales and royalties from value-added products. Savings with the Topolan project and with planning and distribution. Number of titles from previously collected topographic data validated for the benefit of all Canadians.

1.2: Geographic Knowledge (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Transition phase: production and maintenance of NTS series (map titles: 50 revised, 500 reprinted; map quantities: 475,000 distributed).	Phasing out production of the NTS.	Support for the distribution of the NTS series is maintained. Numbers of map titles revised, reprinted. Number of maps distributed.
Verify the feasibility to scan and distribute on Internet the products of the National Air Photo Library (NAPL).	Digitize the NAPL collection pending the result of the first year study.	The complete photo collection to all Canadians is accessible.
Develop the logic model that would provide a national standard for GIS enabled toponymic data bases ready to provide spatial digital information compatible with the CGDI.	Implement results as remote database to GDB.	A logic model for use during the second phase of development is established. A coalition of partners capable of sustaining the project exists. Map automation is facilitated. Up-to-date toponyms for digital maps and associated products are provided.
Continuously improve systems through corrective actions and maintenance of ISO 9001 registration.	Continuously improve systems through corrective actions and maintenance of ISO 9001 registration.	An increased level of client satisfaction with products and services. Greater than 95 percent client satisfaction with digital topographic products and services.
Complete the production of VMAP1 (250 NTDB Data sets and 13 VMAP1 Libraries).	Project completed.	A complete coverage of Canada with the military VMAP1 data for the Department of National Defense. - number of libraries - unit cost
Develop tools to extract digital products (TopoGraf) from the Geospatial Data Base.	Continue the development of the processes that will extract the digital products (TopoGraf) from the Geospatial Data Base	A digital standard and customized products are available online to users.
Implement these tools to get visual access to TopoGraf products.	Complete the implementation of visualisation tools for TopoGraf products.	Online visualisation of TopoGraf products is available.
Work with national and provincial organizations trying to link specific databases in a distributed environment (Ontario, British Columbia, National Transportation Office, ...)	Work with national and provincial organizations trying to link specific databases in a distributed environment	Reduced maintenance costs and a more complete and up-to-date coverage of Canada's landmass.
Provide specialized cartographic imaging and printing services to the Government of Canada's mapping agencies: - 645 topographic maps titles - 111 aeronautical chart titles - 40 hydrographic chart titles - 25 geological map titles - 35 other titles	Maintain the provision of these services.	Client satisfaction Cost recovery Production targets for imaging and printing are met.
Investigate and develop processes for digital and distributed printing.	Continue to develop and implement these processes.	New map products are printed digitally and plotted at external sites.
Publish a new 1:4M scale wall map showing all of Canada. Sub-license at least one additional commercial distributors / value added reseller of Landsat-4, 5 and 7 data.	Complete the revision of approximately 6 sheets of a 1:2M scale map of Canada. Sub-license at least one additional commercial distributors / value adders of Landsat-4, 5 and 7 data.	A 25 percent increase in revenue for data access services by CCRS over 3 years.

1.2: Geographic Knowledge (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Work with federal and provincial partners to create layers for GeoConnections and the Geospatial Data Base (GDB). Update and upgrade 250,000 km of the National road network. Provide 250 Landsat 7 ortho-images towards a national coverage. Update and improve the accuracy of 200 of the existing digital vector data coverage using Landsat 7 ortho-images. Create 1000 data sets for a digital elevation model (DEM) from 1:50,000 NTDB.	Work with provincial, federal and industry partners to create layers for GeoConnections and of the Geospatial Data Base (GDB). Update and upgrade 200,000 km of the National road network. Provide 250 Landsat 7 ortho-images towards a national coverage. Update and improve the accuracy of 750 of the existing digital vector data coverage using Landsat 7 ortho-images. Create 1000 data sets for a digital elevation model (DEM) from 1:50,000 NTDB.	Upgraded topographic layers are made available through CGDI. - Number of new and potential partners. - Number of data sets, ortho-images and km updated.
Work with Environment Canada (EC) to complete the merged of the hydrologic basins and the drainage basins for Digital Atlas. Work with AAFC, complete merging of eco-stratification framework into Digital Atlas. Purchase low-density road network information data and merge this into the Digital Atlas. Add pipelines and /or electrical network data info.	Three new framework layers are completed in the Digital Atlas.	Improved atlases for use by decision-makers.
Provide free high spatial resolution data for research projects and applications development.	Develop information products for forest mapping using high spatial resolution satellite data.	Number of public and private agencies using high spatial resolution EO data.
Deliver 15 thematic content layers for the Atlas (e.g., Income, Aboriginal Issues; Population; and Historical exploration maps, etc. Accept the content as part of GeoConnections contracts (e.g Canadian Heritage, Health and Freshwater Resources) Build portal to other Canadian atlases Implement two demo projects that involve satellite and *in-situ* ground measurements with external partners. Develop the methodology to map biodiversity using EO data.	Project completed.	Number of companies and organizations using *in-situ* and remotely sensed data in resource management.
Implement real-time distribution of GPS Corrections (GPS•C) in collaboration with partners. Enhance GPS Corrections for operational mode readiness and distribution.	Continue collaborative management and development of distribution of GPS•C. Maintain and enhance GPS•C in accordance with technological advances and evolving user needs.	Accessibility of GPS•C from coast to coast to coast and beyond in 2002. Demonstration of enhanced real-time positioning capability.

1.3: Geoscience Knowledge: Develop new and updated geoscience data, information, synthesis products and advanced knowledge of earth science processes for incorporation in a consistent and accessible geoscience knowledge base.

- Establishing Geoscience Mapping Priorities
- Mapping Canada's Water Resources
- Geoscience Mapping Techniques and Standards
- Partnered Thematic Mapping
- Coordinated Studies of Resource Potential
- Increasing Geoscience Capacity

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
NATMAP projects: *Slave NATMAP, NWT:* final report, geochronology database, geoscience atlas, and geological maps. *Western Churchill NATMAP, Nunavut:* 2 bedrock (1:100K) and 2 surficial (1:50K) geology maps, digital atlas, regional metallogeny synthesis, GIS compilation, Shield metamorphic map, 10 journal papers. *Western Superior NATMAP, Ontario/Manitoba:* 11 geological maps (1:20K - 1: 250K), tectonic map and CD-ROM, mineral potential maps, 2 journal papers. *Ancient Pacific Margin NATMAP, B.C./Yukon:* 11 Open File surficial geology maps, Open File bedrock maps, Alaska Highway Guidebook. *Central Foreland NATMAP, NWT/Yukon:* 2 surficial and 1 bedrock geology maps, 6 Open File maps.	NATMAP projects: *Slave:* project completed. *Western Churchill:* project completed. *Western Superior*, project completed. *Ancient Pacific Margin:* 8 Open File surficial geology maps. *Central Foreland:* Final 4 Open File maps, 4 reports and associated data sets released. New NATMAP type projects developed.	Requests for products and information through sales, Web site access, workshop and field trip participation. Number of partnerships of developed and participation in future NATMAP type projects. Evidence of new or increased exploration in areas studied. Anecdotal and testimonial information on value of information and impacts. Journal citations of GSC science. Reviews by provincial and territorial Technical Advisory Committees.
Publications on the stratigraphy and evolution of the Humber Zone, Siluro-Devonian basin and Carboniferous and earlier geology of eastern Canada.	Synthesis of bedrock and Quaternary geology for the Matane/New Brunswick and Anticosti/Gaspé transects.	Journal citations of GSC science.
Regional scale bedrock geoscience projects in: the Appalachians and sedimentary basins of N.B.; south-central Baffin Island; Grenville Orogen of Ontario/Quebec; Nain region, NWT; the Thelon-Taltson magmatic zone, NWT; Back River volcanics, Nunavut; Ellesmere and other Islands in Nunavut; Queen Charlotte Is. and interior regions of B.C.; and Cordillera of Yukon will deliver: 27 geological maps at various scales, 21 Open Files and published reports. Regional scale surficial geoscience projects in N.B., Newfoundland, Quebec, central Nunavut, and Yukon will deliver 12 maps at various scales, related reports and Open File releases. Coordinated bedrock, surficial, geochronology and airborne and ground geophysics surveys of central Baffin Island will deliver 4 Open File maps, 9 published reports and a CD ROM compilation. Lithoprobe and other geophysical studies of the earth's crust along transects in Western Superior and southern Ontario, SNORCLE and Cordilleran regions of B.C. will deliver 6 reports on seismic and EM surveys, conduct paleomagnetic and potential field studies, produce CD-ROM database and GIS compilations.	Regional scale bedrock geoscience projects in: the Appalachians and sedimentary basins of N.B.; south-central Baffin Island; Grenville Orogen of Ontario/Quebec; Nain region, NWT; the Thelon-Taltson magmatic zone, NWT; Ellesmere and other Islands in Nunavut; Queen Charlotte Is. and interior regions of B.C.; and Cordillera of Yukon will deliver: 24 geological maps at various scales, 10 Open Files and published reports and 3 data sets. Ongoing with the delivery of 18 maps at various scales, related reports, and Open File releases. Ongoing with delivery of 4 Open File maps, 5 published reports and digital data release. Lithoprobe and other geophysical studies of the earth's crust along transects in Western Superior, southern Ontario and Cordilleran regions of B.C. will deliver 9 papers on seismic and EM survey results, Open File seismic data for groundwater resource assessment, a Pan-Lithoprobe synthesis; and an archive of Lithoprobe data and interpretive results.	Anecdotal and testimonial information on the value of regional scale bedrock geoscience project. Number of journal citations of GSC science. Favourable reviews by provincial and territorial Technical Advisory Committees.

1.3: Geoscience Knowledge (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Publications on the seafloor stratigraphy, structure and habitat of offshore regions of Atlantic Canada, and Arctic channels.	Publications on the seafloor stratigraphy, structure and habitat of offshore regions of Atlantic Canada, and Arctic channels. Publications on the seafloor stratigraphy, structure and habitat of offshore regions of Atlantic Canada, and Arctic channels.	Use of results by the oceans industry. Number of partnerships with the marine industry.
Preparation and production of a new magnetic anomaly database for North America (MADONA), with data and collaboration from USGS and CRM Mexico.	Free online digital database of magnetic data spanning the North American continent and adjacent oceanic regions is made available.	Number of requests for databases.

Acquisition, processing and merging of airborne geophysical data for northern Ontario from industry and public sources to deliver custom data products for clients.	Project completed.	Willingness of industry to provide data.
Operate and develop the GSC geochronology facilities, including the Sensitive High resolution microprobe (SHRIMP) laboratory; U-Pb and Ar-Ar geochronology; tracer isotopes and trace elements to support ~ 20 research projects and in addition, deliver 3 specific facility reports.	Operate and develop the GSC geochronology facilities, including the SHRIMP ion microprobe, U-Pb and Ar-Ar geochronology, tracer isotopes and trace elements will support ~ 20 research projects and will, in addition, deliver 3 specific facility reports.	Level of utilisation of the SHRIMP lab by the GSC and external clients. Revenues from external clients.
Determine time and age correlations in the Canadian Cordillera through micro- and macrofossil studies and report these in 4 papers.	Absolute calibration of time scale in Triassic sections of B.C. and publication of 4 papers.	Citations on the use of correlations.
Annual publication and web release of radiocarbon dates.	Annual publication and web release of radiocarbon dates.	Laboratory output meets demand.
Operate the analytical laboratories and develop the new analytical techniques and applications.	Ongoing.	Revenue generated from external clients. Use of GSC analytical tools and methods by industry, universities and service agencies.

1.4: Cadastral survey framework: Develop new updated geoscience data, information, synthesis products and advanced knowledge of earth science processes for incorporation in a consistent and accessible geoscience knowledge base

- Population of Georeferenced Databases
- Dissemination of Land-related Information

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Complete the meta data and classification project. Continue to develop and maintain the geospatial (land parcel and jurisdictional boundary) databases of the property infrastructure on Canada Lands.	Continue to develop and maintain geospatial databases.	Meta data and classification project completed. Databases maintained.
As part of knowledge management, develop and commence implementation of an IM/IT plan for the Division. Provide on-line national access to the geospatial (land parcel and jurisdictional boundary) databases of the property infrastructure on Canada Lands.	Continue with implementation of the Division's IM/IT plan. Maintain and enhance Divisional and Operation Centre databases.	IM/IT positions staffed. IM/IT plan developed and milestones in plan achieved. Databases maintained and on line. Increased awareness of LSD's role, products, and services through client feedback from the biennial LSD client satisfaction measurement program.
Create an LSD intranet. Establish an LSD marketing position. Develop an LSD marketing strategy.	Refine the marketing strategy.	Intranet activity. Marketing position staffed. Volume of information downloaded from the LSD Web site.

1.5: Resource Assessments: Conduct and communicate the results of resource assessments, as required by federal policy.

- Proposed National Parks
- Marine Protected Areas
- Hydrogeological Resources

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Mineral and energy resource assessments of proposed protected natural regions identified by the Senior Mineral and Energy Resource Assessment Committee (SMERAC): South Nahanni River Extension completed.	Mineral and energy resource assessments of proposed protected natural regions identified by the SMERAC.	Evidence attesting to the use of resource assessment information in decision making about National Parks. Recognition of GSC work by Parks Canada. Number of requests for onshore mineral resource assessments.

1.6: Knowledge access and management: Develop methodologies and infrastructure that will improve the quality, delivery, integration, accessibility and use of geospatial and geoscience information and expertise.

- Management of ESS Information Resources
- Access to ESS Information
- Policies and Standards for Data Integration

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Facilitate development and integration of Sector data sets and databases including thematic and framework geospatial data, metadata, and project information.	Continued enhancement and development of data.	Increased use of metadata. Improved client access. Positive client feed back.
Contribute to the development of data standards to facilitate data interchange with partners and stakeholders and to support the creation of customized products.	Implementation.	ESS standards developed/adapted. Enhanced access. Positive client feedback.
Provide and manage a secure, and reliable network-based IT infrastructure and common Sector application software to meet a range of Sector and departmental requirements.	Ongoing.	99% network availability.
Provide computing support and expertise to Sector staff in developing, maintaining, improving, and integrating sector services, projects, and initiatives.	Ongoing.	Positive client feedback.
Develop a bedrock geology map data model by adapting the NADM (North American Data Model). Development of map-based access tools for subsurface data. Completion of a GIS prototype for NATMAP data. Complete draft versions of Surficial Geology and Geochemistry Data Models, Tool Suites and Stewardship Policies. Develop and evaluate methods to integrate geoscience information.	Continued development and promulgation of applications. Assembly and dissemination of GIS-based NATMAP data. Improvements to the Surficial Geology and Geochemistry Data Models, Tool Suites and Stewardship Policies. Production of 3-D GIS models for geoscience projects.	Successful integration of GSC map data with similar provincial/territorial sources.
Participate in the development of a Canadian network of distributed data warehouses. A number of datasets will be available through GeoGratis.	Continuing.	Number of data sets accessible through GeoGratis. Number of data sets downloaded from GeoGratis and number of geospatial entities and thematic attributes delivered by the GeoAccess warehouse.
Improvements in the functionality, dependability and integration of ESS databases as required to meet client and stakeholder needs and streamline operations.	Continuous improvements as required.	Improved access to integrated data. Improved efficiencies. Positive Client feedback.

1.6: Knowledge access and management (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Complete improvements to the Geoscience Data Warehouse is required to improve the management, integration, and accessibility of digital geoscience maps and data assets held by ESS.	Populate the Warehouse with ESS data. Complete the development of access/permissions tool set for use in CGDI.	The system is compliant with national and international standards and interoperable with information accessible through the CGDI and CGKN. Acceptance and use of the Geoscience Data Warehouse by the GSC, Provinces and Territories. Number of searches conducted through positive client feedback.

Manage the design and production of geological maps, illustrations, figures and photographs using state-of-the-art cartographic methods.	Ongoing design and production of graphics and use of state-of-the-art methods.	Timely output of products. Quality assurance processes in place.
Manage a comprehensive publication program, by preparing publications in various formats for release on paper (offset or on-demand printing) or digitally (Internet, CD-ROM, etc.). Ensure the promotion of ESS publications through the production of the GSC Information Circular and participation in conferences, meetings, workshops, etc.	Ongoing production of publications based on manuscripts received. Continue reliance on alternative publishing technologies to increase productivity and reduce costs.	Turn around time from submission to release of publications. Sales of publications.
Apply dual publication production stream (multi-format design) to some publications as a pilot project, implementing recommendations issued from the focus groups that were held with all GSC science divisions.	Apply dual publication production stream (multi-format design) to all official series publications by April 2002.	Positive client feedback.
Provide scientific and technical editing in both official languages to ensure full compliance with departmental and governmental publishing policies and guidelines and apply quality standards; provide guidance and advice to authors on matters of style, format, terminology, practices and standards	Ongoing.	Positive client feedback.
Contribute to various initiatives dealing with terminology such as the North American Data Model, CGKN, Federal Terminology Council, etc. to improve the use of standard terminology in geoscience. Continue to develop and populate the Geoscience Glossary in partnership with other Sector staff and external partners such as the Translation Bureau.	Ongoing. Provide access to terminology databases through the Geoscience Glossary project. Populate the database.	Number of partner Web sites. Number of terms in the databases.
Enhance the technological and database links, including use of GEOSCAN data, to effectively support a secure electronic commerce option for the sale of Sector products from the GSC Bookstore.	Continue to improve e-commerce functionality and services. Create opportunities to extend e-commerce applications	Value of sales conducted via the Internet
Continue to develop and maintain the Union Catalogue in support of the Virtual Library.	On-going.	Increased use of and satisfaction with the delivery of electronic journals. Number of licence negotiations ongoing with additional suppliers. ESS information resources are equally accessible across the Sector. Updated and easy to navigate page designs are accessible. Client satisfaction with value-added products and connection speed.

1.6: Knowledge access and management (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Continue to develop and maintain value added databases to enhance access to ESS information.	Continue to add functionality and develop new databases.	Usage of Web site. Number of databases accessible within ESS. Positive client feedback.
Enhance access to information through the implementation of XML, ADO and Fast-Link for ESIC databases	Implementation of these technologies on other Web sites for "hot linking" to pertinent publications in GEOSCAN.	Enhanced accessibility of ESIC's databases principally GEOSCAN and the ESIC Photo database.
Continue to lead and support information gateway projects that support distributed networks of data i.e. mages Canada; ESS E-commerce; and Collaborative Digital Reference Service.	Continuing with additional functionality and new projects.	Use of and satisfaction with the GSC photo images and enhanced ESIC Web Sites. Statistical data provided by Industry Canada and the National Library are included.
Improve Internet and Intranet access to the ESIC virtual library, cartographic services, scientific publishing, GSC bookstore web sites and the Geoscience Data Warehouse.	Continued development of Web Sites and enhancement of Internet and Intranet services. Implementation of government Common Look and Feel (CLF) on both sites. Continued adaptation of technological advancements to enhance database searching and retrieval.	Increased access to ESS products and services for clients, with updated and easy to navigate page designs.
Lead the 5NR Knowledge Integration Working Group, to facilitate the inter departmental work, sharing of data, information and knowledge, and communicating science and technology to clients.	Ongoing and growing.	Creation of client focused Web interfaces and electronic content that highlights 5NR contributions to science and technology and supports collaborative and

		cooperative KM/IM projects and initiatives.
Develop a Strategic Alliance/5NR Libraries Gateway to facilitate searching federal S&T library catalogues by resolving challenges, better organizing documents in all formats so that they can be logically filed and later retrieved.	Provide advice and coordination to support other science-technology libraries joining the Gateway. Further develop and enhance the gateway and broaden scope of content.	The 5NR gateway is established.
Explore potential for 5NR Directory of Expertise project.	Implement the project if feasible.	Improved access to knowledge related to 5NR
Contribute to the establishment of the integrated national systems and standards required to provide Internet access to consistent geospatial information from ESS and other Canadian agencies through participation and leadership in programs such as GOL, NRCan Online (NOL), GeoConnections, 5 NR, and the Canadian Geoscience Knowledge Network.	Ongoing.	Integrated national systems and standards are established. Positive client feedback.
In partnership with other ESS Divisions, complete *the ESS Geoscience IM/IT Roadmap* that will define the gaps in current IM/IT policies and practices and recommend how the gaps can be eliminated.	Implement actions to address gaps.	Increased efficiencies. A complete ESS Geoscience IM/IT Road map is available for use.
Provide essential support and expertise to projects such as: GSC Publications Directory application, NRCan Subject Classification Working Group and Task Force, National Academy of Sciences (NAS) Web authoring and Management System, web Client Survey and Analysis Tool.	Ongoing.	Client feedback.

1.6: Knowledge access and management (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Conduct a comprehensive engineering study on data management and access within the Atlas of Canada.	Atlas software development complete and data bases re-assembled in a new format. Develop an Access Protocol Infrastructure that permits users to superimpose their information on the authoritative data in the Atlas.	Atlas data being reused in other agencies. 15 percent annual increase in use on a base of 450 organizations.
Improve the CEONet (GeoConnections Discovery Portal) with bilingual meta-data and enhanced data access. Extend distributed search connections to DFO; Environment Canada; Newfoundland, Yukon, Quebec, Manitoba and B.C. and conservation Data Centres.	Establish distributed search connections to StatsCan, AAFC, Ontario, Nova Scotia and New Brunswick. Ongoing.	Use of CEONet by clients. Size and composition of the network.
Develop access/delivery services for major data bases within CCRS, GSC, CTI-S, and CFS. Develop a format translation service for CCRS data sets.	Develop access/delivery services for major data bases within EC, StatsCan, and Health Ontario. Enable format translation services for GC.	Delivery service available and in use.
Produce Geoscape posters and websites for Ottawa, Montreal, Calgary, southern Saskatchewan and Whitehorse.	Geoscape posters and websites for Toronto, Winnipeg, Halifax, Nunavut, Nanaimo, Grand River watershed and Fraser River basin.	Number of posters sold. Number of Geoscape workshops requested for teachers, general public and other groups. Volume of Web site traffic.
Expansion of Cord*Link* digital library.	Expansion and upgrades to Cord*Link* digital library.	Number of users accessing the digital library.
Develop new methodologies for data management, integration and analysis of data from bedrock geoscience projects and deliver 4 CD-ROM compilations, 4 papers and 2 new Web sites.	Ongoing with delivery of 3 CD-ROM compilations, 4 papers, and technology transfer to provinces.	Size of the client base.
Deliver on-demand aeromagnetic and gravity data, maps and derived products. Publish an Open File of the 1:7.5 million scale map series of aeromagnetic, gravity and topographic data sets.	Deliver on-demand aeromagnetic and gravity data, maps and derived products, including a digital archive of analog magnetic survey data from provinces.	Demand for Geophysical Data Centre products.
Under the Canadian Geoscience Knowledge Network (CGKN) initiatives, develop new, online availablity for various current and archived GSC geoscience data and information holdings (WELLS, e.g.)	New, online availability of various current and archived GSC geoscience data and information holdings (e.g. organic geochemistry, palaeontology).	Use by clients. Client feedback. Amount of information newly available online.
New collaborative initiatives and policies developed	Ongoing.	Acceptance and involvement of federal (5NR), provincial and

under the CGKN Data Infrastructure Working Group.		territorial agencies in data standards development.
Participation in North American standards development.	Ongoing.	Acknowledgement and adoption of Canadian standards.
Negotiate agreements with 6 or more provinces/territories to sign the Intergovernmental Geomatics Accord. Develop a response to policy recommendations on Internet distribution of Geomatics data. Develop a response for cost-sharing production, maintenance and distribution of national geomatics data.	Negotiate agreements with all provinces to sign the Intergovernmental Geomatics Accord). Populate national geomatics databases with data from 4 or more provinces/ territories.	Number of agreements signed. Percent of national geomatics database populated.

1.6: Knowledge access and management (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Develop a NGSC Stewardship policy for the Surficial Geology and geochemistry data models.	Project completed.	Level of participation of provincial and territorial agencies in data model policy and stewardship developments.
Raise the profile of the Geo-Atlas of the St. Lawrence.	Incorporate the data from the Montreal and Winnipeg projects in the HYDROLINK site.	

NRCan Goal Two: To sustain the economic and social benefits derived from natural resources for present and future generations.

ESS Goal 2: Provide geospatial and geoscientific knowledge to help develop and sustain economic and social benefits.

Earth Sciences Sector
Appropriation funding by objective ($ 000)

ESS Goal 2	2001-2002	2002-2003	2003-2004
2.1: Resource Exploration	21 206	21 399	16 401
2.2: Industry Support	8 982	9 668	10 668
2.3: Rural, Remote and Aboriginal Communities	9 545	9 718	6 770
2.4: Northern Research	4 145	4 152	4 152
Total	**43 878**	**44 937**	**37 991**

2.1: Resource Exploration: Promote discovery of the resources required to sustain mineral and hydrocarbon production in Canada, through thematic research conducted in collaboration with provinces, territories, industry and academia.

- Mineral and Hydrocarbon Research
- Mapping Canada's Water Resources
- Knowledge of Non-renewable Resources
- Sustainable Resource Exploration and Development

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Publications related to studies on the origin and emplacement of mineral deposits, including: a) copper-nickel platinum group element deposits; b) diamonds in the NWT; c) massive sulphides in B.C., Yukon and Quebec; d) lead-zinc-copper in Nunavut; e) gold in western Ontario; f) chromium in Quebec; g) modern seafloor hydrothermal systems - Bransfield Strait and Foundation Seamount Chain, SW Pacific.	Publications related to studies on the origin and emplacement of mineral deposits, including: a) massive sulphides; b) 3 published scientific reports, laypersons' summary; and map of prospective areas for Cu-Pb-Zn in Nunavut; c) reports on Red lake, Ontario gold, and gold metallogeny of greenstone belts; d) report on chromite mineralization models; e) survey drilling at Tabar Feni Arc, SW Pacific; f) maps of three Flin Flon area mines.	Generation of new exploration targets. Requests for reports. Industry response to products. Recognition by Technical Advisory Committees and other industry organizations.
Produce occurrence maps and databases for PGEs, Ni and Cu for Ontario, Quebec, Newfoundland and Labrador, NWT and Nunavut.	Produce a national database and occurrence maps.	Number of requests for database and maps.

2.1: Resource Exploration (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Use the results of geoscience mapping in targeted areas to aid in focusing mineral exploration under the Targeted Geoscience Initiative (TGI): Understand tectonism, volcanism and depositional events in northern Quebec and Baffin Island (3 published and Open File reports); Integrate geology and geophysics investigations in NWT - Slave Province and publish 3 Open Files and Open File reports, and 3 analog and digital maps; Conduct bedrock, surficial and magnetic studies in central Nunavut -Committee Bay and publish 6 Open File reports; Define geological history of the Red Indian Line in central Newfoundland and publish 3 reports, magnetic and electromagnetic data files; Define the bedrock geology along a corridor straddling southern Labrador and Quebec and publish 3 Open File reports and 2 maps.	Ongoing with emphasis on northern Quebec and Baffin Island (published 2 Open File reports, geochronology and a database); NWT - Slave Province (produce 3 1:100K maps and publish 4 papers); Nunavut -Committee Bay (publish 3 reports, 4 1:250K maps and 4 digital 1:250K compilations); Central Newfoundland - Red Indian Line (publish 3 reports, thematic maps, a CD-ROM, and digital atlas); Southern Labrador and Quebec (produce 4 1:100K maps).	Demand by industry for occurrence maps and data bases to meet increased PGE exploration. New or increased levels of exploration in targeted areas. Number of requests for publications.
Produce multiparameter airborne geophysical maps for areas of northern Saskatchewan and Yukon.	New multiparameter surveys under development.	Joint venture acquisition of aeromagnetic data.
Conduct regional aeromagnetic surveys to define geological features to help focus mineral exploration in the Mackenzie Valley, NWT (9 1:100K maps); Wawa-Kapuskasing, Ontario (20 1:50K maps,); Lac Vernon, Quebec (22 1:50K maps); Committee Bay, Nunavut (4 1:100K maps).	Ongoing. Develop and supervise new surveys in collaboration with industry, provinces and new partners.	New or increased levels of exploration in targeted areas. Requests for publications and data bases.
Release National Geochemical Reconnaissance (NGR) Surveys for east-central N.B., and survey completed for Bella Coola area, B.C.	Release NGR Surveys over regions targeted for mineral potential - N.B. and others. Bella Coola NGR Open File.	New and/or repeat industry partnerships for future surveys.
Report on delineation of basin stratigraphy in Cape Breton Island as a source of industrial minerals.	Release the final report evaluating implications of geophysical data in terms of industrial mineral potential. An inventory of salt and gypsum resource database is made available online.	Amount and value of commercial activity related to the Cape Breton project. Web site use.
Release the results of using the following new exploration techniques, surface geology map and reports on till geochemistry, glacial history and indicator minerals (Lac Vernon, Quebec). Publish 6 Open File reports on the evaluation of the geophysical methods for mineral explorations in areas of thick overburden (Ontario Greenstone belts).	Ongoing with emphasis on surface geology map and reports on till geochemistry, glacial history and indicator minerals in Lac Anuc, Quebec.	Requests for publications.
Release results of studies of VMS potential of east Bella Coola, B.C. including 2 reports and two Open File bedrock maps.	Ongoing with 3 reports and two Open File bedrock maps being released.	Requests for publications.
Complete geophysical and till geochemistry surveys in southern Yukon. Release bedrock maps of contiguous areas.	Release digital and paper copy Open File maps.	Requests for publications.
Report on west coast hydrocarbon resources. Begin a coalbed methane scoping study.	Conduct client workshops and publish 4 reports and associated databases.	Demand for publications and data bases. Attendance at workshops.
Compile existing surficial data and 1:50K bedrock geology for the Gulf Islands, B.C.	Compile structural data and incorporate well log data from the B.C. Ministry of Natural Resources.	

2.1: Resource Exploration (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Release results of subsurface characterization of sedimentary basins to aid in assessing the potential for oil and gas: Northern Plains - 3 published and Open File reports; Beaufort-Mackenzie Basin - preliminary report; Western Canada Sedimentary Basin (WCSB) - 7 published and Open File reports; East Coast Frontier Basins (Grand Banks, Jeanne d'Arc) - 4 published and Open File reports, 4 draft geological and geophysical maps.	Results of subsurface characterization of sedimentary basins to aid in assessing potential for oil and gas: Northern Plains - 2 published papers; Beaufort-Mackenzie Basin - 4 published papers, 4 databases, maps, cross sections; WCSB - 9 published and Open File reports; East Coast Frontier Basins (Grand Banks, Jeanne d'Arc) - 7 published and Open File reports, 4 final geological and geophysical maps.	Demand for publications data bases; attendance at workshops. Resource exploration catalyzed by outputs. Client consultations.
Reports on studies related to gas hydrates as a potential fuel - Delineation and quantification of west coast marine gas hydrates through geophysical surveys; production testing of Arctic gas hydrate well; laboratory studies and modelling of gas hydrate stability conditions.	Ongoing with an emphasis on: Reporting on marine gas hydrates offshore of Vancouver Island and Arctic test well; long term monitoring of Arctic gas hydrate wells completed; laboratory studies of physical properties of Arctic and marine gas hydrates.	Number of requests for review from provincial economic development agencies. Acceptance of the gas hydrate stability model by the academic community.
Report on physical property data (porosity, permeability, conductivity, and texture) from Canadian and global drill hole localities.	Program expanded into frontier areas.	New and renewed partnerships.
Incorporate results from EXTECH III (Yellowknife) geological, geochemical and geophysical studies into regional and local mine scale geoscience data bases (databasu, 2 published and Open File reports). Publish results of geological, geophysical and geochemical investigations in the Athabasca Basin (EXTECH IV) to develop exploration criteria for uranium deposits (2 published and Open File reports).	Development of new gold exploration models specific to EXTECH III terrain. Compile GIS-based geoscience data base. Develop detailed basin stratigraphy and basement structure models from coordinated seismic and regional stratigraphic studies.	Discovery of new deposits in existing mining camps or areas. Diversification of Yellowknife mining base. New and/or increased exploration in existing mining camp areas.
Publish results of mineralogical, geochemical and isotope studies of kimberlites in the Lac de Gras (NWT) and Timiskaming (Ont) regions (2 published reports).	Report on regional and local scale investigations of kimberlite signatures and improved exploration methods.	Requests for publications.
Continued developing geochemical and drift prospecting methods in different surficial terrains of Ontario and Yukon.	Develop improved drift prospecting and geochemical exploration methods in Quebec.	Increased levels of exploration in new targeted areas.
Establish the directions for GSC's national hydrogeology program.	Implement GSC's hydrogeology program.	Acceptance by federal, provincial and municipal agencies of GSC's hydrogeology program strategy.
Complete the methodology manual for mapping granular aquifers.	Complete the methodology manual for mapping fractured aquifers.	Many new partnerships initiated with the provinces and industry.
Continue compiling the database for the Maritimes hydrogeology project. Produce a surficial geology map of southeast New Brunswick.	Refine the geological context and the compilation of hydrostratigraphic data. Begin synthesis and production of hydrogeological plates.	Certification by provincial and municipal authorities of the implementation of the hydrogeological mapping methodology.
Release Open File data reports, maps, papers and web-enabled products on Oak Ridges Moraine (ORM) geology and hydrogeology.	Publish a comprehensive summary report on the regional hydrogeology of the Oak Ridges Moraine area.	Amount of support from partner agencies.
Release the final report, maps and Open File data reports on the geology of the Lake Winnipeg Region.	Project completed.	Project Web site visits. Amount of support from partner agencies.
Publish 2 reports on the hydrogeochemistry of groundwater in B.C., N.B. N.S. and Manitoba.	Continue collecting groundwater hydrogeochemical field data from test wells in N.B., N.S. and B.C.	Number of requests for data.

2.2: Industry Support: Enhance the capacity and efficiency of the Canadian geomatics and geoscience industries in order to increase their global competitiveness.

- Business Opportunities
- Support to Canadian Businesses
- Technology Transfer
- Competitive Ability of Canadian Industry
- Canadian Active Control System

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Draft technical specifications for ISO imagery and gridded data.	Finalize the Technical Specification document for ISO imagery and gridded data.	Readiness for ISO certification.
Support at least 4 companies through the Innovation Acceleration Centre.	Continue to support at least 6 companies.	Targets met.
Contract out $400K for photo reproduction work and toponymic services for national program.	Ongoing.	Contracts awarded to targeted amounts.
Contract out $2M worth of topographic database work.	Contract out $2.5 M worth of topographic database work.	Contracts awarded to the targeted amounts.
Contract out $700K worth of printing work of small format aeronautical charts.	Contract out $700K worth of printing of small format aeronautical charts.	Contracts awarded to targeted amounts.
Transfer Downhole Seismic Imaging (DSI) technology to industry with a final report to DSI consortium; scientific journal.	Participate in national and international crustal and lithospheric studies, earthquake aftershock deployments, DSI and Electromagnetic (EM) mining camp studies.	Amount of partnership support in developing new technologies.
Develop, test and apply new remote sensing, borehole geophysics and isotope mineral exploration techniques.	Ongoing.	Number of technologies transferred to the private sector.
Complete the Digital enhancement and testing of the Marine Electromagnetic (MEM) system.	Identify an area to contract out a survey using the MEM system.	Number of companies using MEM technologies.
Publish an assessment of satellite and other magnetic data for crustal magnetization modelling and survey levelling.	Publish gravity and magnetic maps with interpreted Precambrian basement for the WCSB.	Number and value of potential contracts identified.
Publish strategies for applications of magneto-tellurics to mining-scale problems.	Report on determination of mineral potential based on statistical modelling of airborne geophysical data. Release papers on high-resolution magnetic and electro-magnetic survey for exploration and geophysical investigations in the Bathurst Mining Camp.	Number of requests for products and data bases.
Complete the world gold geoscience database as part of the World Minerals Data Base Project.	Publicly release the world gold database. Expand the World Geology Map by incorporating data on additional mineral deposits.	Partnership support in developing new data bases.
Make ESS expertise available to Canadian companies on a cost-recoverable basis and assist in delivering successful international contracts, including the delivery of $20 million worth of international contracts. Create opportunities for Canadian industry to compete for international contracts, by conducting five missions abroad and hosting 20 incoming trade missions.	Ongoing.	Number and value international contracts obtained by Canadian companies. Number of business opportunities created through missions and visits.

2.2: Industry Support (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Transfer technology, developed in ESS, to Canadian industry for commercial exploitation.	Ongoing.	Number of new and renewed licenses. Value of royalties generated.
Develop and implement an Information Management project for the Geological Survey of Iran.	Expand the use of Canadian Information Management technologies in other agencies within Iran.	Number of Canadian companies, employing Canadians that earn money abroad.
Develop training courses and technology transfer activities in hydrography for the National Cartographic Centre of Iran.	Project completed.	Feedback regarding the courses developed for the utility of the National Cartographic Centre.
Complete the Multinational Andean Project (MAP) and release geochemical reference standards, a metallogenic map, and 2 airborne geophysical surveys.	Develop a new project.	Request for a new project from South American countries.
Continue to implement the CIDA hydrogeology project: in northern Brazil. Establish specifications for airborne geophysical surveys and other surveys undertaken.	Complete the Brazil hydrogeology project.	Use of Canadian hydrogeology management techniques and technologies by Brazilian agencies.
Support CIDA in implementing a geospatial infrastructure to assist demining in Mozambique.	Ongoing.	A toponymic database and raster topographic maps of the country is delivered on schedule. Cost recovery. Client satisfaction. On schedule.
Support CIDA in preparing RFPs for the implementation of a geomatics infrastructure in Tunisia (year 2 of 5).	Support CIDA in preparing RFPs for the implementation of a geomatics infrastructure in Tunisia (year 3 of 5).	A new geomatics infrastructure for Tunisia is delivered on schedule. Cost recovery. Client satisfaction. On schedule.
Commercialize hyperspectral analysis software.	Produce a tutorial for polarimetric analysis. Commercialize polarimetric analysis software	Sales of hyperspectral image analysis software. Sales of polarimetric image analysis software.
Complete a commercial mission to Iran and Malaysia.	Project completed.	Number of business opportunities created.
Improve the Canadian Geodetic Information System for client access. Transfer technology for active control and gravimetry systems.	Project completed.	Availability of precise point positioning capability online.
Promote ESS expertise, information, products and services at trade shows and conferences.	Ongoing.	Participation at trade shows, conferences and national and international meetings.

2.3: Rural, Remote and Aboriginal Communities: Assist in building the capacity of rural, remote and Aboriginal communities; and fulfill responsibilities under self government agreements, Comprehensive Land Claims legislation, Treaty Land Entitlement and Specific Land Claims programs.

- Support for Aboriginal Self-governance
- Adapting the Canada Land Survey System (CLSS) in Northern Communities
- Fulfilling Land Claim and Treaty Responsibilities
- Geoscientific and Geospatial Capacity-building

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Provide and facilitate capacity building and training for Aboriginals and First Nations.	Ongoing.	Number of Aboriginal/First Nation capacity building and training events delivered. Participant feedback at workshops, etc. Client satisfaction.
Obtain funding for an Aboriginal capacity-building model program.	An Aboriginal capacity-building model program, if funding is obtained.	Amount of funding obtained.
Participate in negotiations to adapt the Canada Lands Survey System to individual needs. Conduct a property rights socio-economic study.	Ongoing.	Agreements successfully negotiated. Client satisfaction as measured biennially. Socio-economic study completed.
Manage over $7 millions worth of survey contracts.	Ongoing.	Progress in accordance with established land claims schedules.
Organize participate in geoscience workshops to assist Aboriginal groups and communities to understand and develop their natural resources.	Ongoing.	Number of requests for workshops received. Level of participation in workshops.
Build the capacity of rural, remote and Aboriginal communities to use geoscientific and geospatial knowledge for decision-making regarding land use, resource management and sustainable development. Reach 20 additional for a total of 40 participating communities.	On-going. Reach 25additional communities for a total of 65 participating communities. Continue working towards the goal of 100 communities by 2005.	Client feedback. Amount of coordination between levels of government in making information more accessible to communities. Number of partnerships First Nations, provincial, territorial and municipal governments and organisations. Feedback regarding the use of the Sustainable Communities model in Canada.
Develop local school content on 20 schools for the Canadian Communities Atlas. Provide a local geographic context on issues to the DM and the Minister, as requested. Produce 3 Aboriginal thematic maps.	Develop local school content on 75 new schools and 100 new projects.	Target met.

2.4: Northern Research: Provide logistics support and capacity-building to enhance the S&T knowledge base for the sustainable development of the North's natural resources and decision-making on climate change, environmental protection and land-use planning.

- Support for Arctic Research
- Geoscience and Geomatics Capacity-building in the North

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Complete plans for the Northern Basins Initiative scoping study.	Initiate the Northern Basins Initiative scoping study.	Scoping Study plans are accepted as the standard for future S&T studies in northern sedimentary geoscience.
Collaborate with partners to provide real-time GPS	Ongoing.	Availability of a seamless,

Corrections in the North. Maintain and improve the accuracy of the Canadian Spatial Reference System (CSRS) in the North.	Monitor alternative service options and continue accuracy enhancements.	augmented GPS infrastructure that includes the northern region. Level of accuracy of the CSRS.
Reorient Polar Continental Shelf Project (PCSP) services and operating procedures to make the best use of the human and financial resources available.	Ongoing.	Collaborations with other agencies increase.
Develop a Northern Land use map.	Complete the Northern Land Use map.	Number of requests for the Northern Land Use map.
Complete a hyperspectral database of northern environment features relevant for geological applications	Expand the use of hyperspectral-based information products in the environment and oil and gas industry.	Use of hyperspectral data by the geological and environmental communities.
Finalize an MOU with the Nunavut Research Institute and implement joint activities.	Ongoing.	Number of collaborative projects initiated.
Review the MOU with the Aurora Research Institute in Nunavut and revise it as needed.	Ongoing if renewed.	A new MOU is signed.
Undertake joint ventures as per the new MOU with the Canadian Coast Guard (CCG).	Ongoing.	Projects underway.
Analyze and report on results of the 2000 LSD client survey and implement changes as needed. Provide written feedback to clients.	Repeat the survey.	Client satisfaction.
Begin discussions, consultations and review of how best to deliver logistics services to meet current and future needs.	Ongoing. Determine next steps.	Results of consultations with the PCSP Advisory Board, ESS management and clients.

NRCan Goal Three: To manage the environmental impacts of natural resource development and use.

ESS Goal 3: Provide geospatial and geoscientific knowledge to minimize the impacts of land use, natural resource development and climate change.

Earth Sciences Sector Appropriation by objective ($ 000)			
ESS Goal 2	2001-2002	2002-2003	2003-2004
3.1: Climate Change	4 180	4 009	4 009
3.2: Environmental Stewardship	5 627	5 079	5 079
Total	**9 807**	**9 088**	**9 088**

3.1: Climate Change: Understand the earth science aspects of the impacts of climate change and extreme climate events on Canada and, with partners, develop strategies to minimize and adapt to these impacts.

- Earth Science Aspects
- Climate System Dynamics
- Carbon Sinks
- Earth Science Information for Policies and Protocols
- Geodetic and Geodynamic Knowledge

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Produce a high resolution RADARSAT mosaic of Canada (100m resolution).	Produce an education package incorporating the RADARSAT mosaic data.	Government organizations using the RADARSAT mosaic. Number of requests for the education package.
Reports on studies of eolian deposits as a record of past drought and climate change impacts in the Prairies.	Final report of climate change impact and adaptation studies in the Prairies.	Land use plans for prairie dune areas that incorporate climate change considerations.
Development of national permafrost monitoring network as Canadian contribution to global network (GTN-P).	Establishment of national database protocols for permafrost monitoring.	Level of participation in network. Requests for Canadian permafrost data through website.
Report on climate-induced landscape instability in permafrost terrain of the Mackenzie Valley.	High-resolution spatial database for Mackenzie Valley.	Use of permafrost information by private sector in pipeline routing decisions.
A database of geodetic and volumetric changes for reference glaciers and reports to international programs measuring mass balance in glaciers.	Reports to international monitoring programs on measured glacier mass balance in Arctic and western mountains.	Number of requests for data to assist monitoring of climate change, ice cover and water resources. International interest in the methods being applied in Canada.
Compilation of hydrogeological, piezometric and climatic data (Que., N.B., P.E.I.). Report on the potential impact of climate change on groundwater resources.	Deliver a structured database on landslides/Ville de La Baie and the Federation of Canadian Municipalities.	Confirmation of the relevance of the database and its use. Development of new partnerships and new climate change projects.
Completion of ice coring and snow sampling from Mount Logan to assess past climate and environmental changes.	A database of ice core and snow sample analyses, and a report on initial results.	Successful sample collection.

3.1: Climate Change (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Publications on the climatic history of circumpolar ice caps from oxygen isotope record. Publication of an assessment of the Younger Dryas cooling period in western Arctic.	Planning the Canadian-hosted Third International Conference on Mars Polar Science and Exploration. Report on late glacial and Holocene age climate threshold events in western Arctic.	Level of international funding and participation.
Preliminary report on seismic monitoring to determine the efficacy of hydrocarbon reservoirs for long term CO_2 storage in the Weyburn CO_2 Injection Project. Data, maps and reports for Coal Bed Methane (CBM)	The final report on seismic monitoring is used to determine the efficacy of hydrocarbon reservoirs for long term CO_2 storage in the Weyburn CO_2 Injection Project.	Canadian influence on the development of international environmental strategies. Canadian influence on further mitigation research.

CO_2 sequestration.	Ongoing.	
Complete development of an international terrestrial carbon observation strategy using remotely sensed data. Start the development of a Landsat 7 land cover map of Canada.	Produce a land cover map of Canada using 250m resolution MODIS data. Complete 25% of the land cover map.	Spatially explicit carbon sequestration maps that predict future carbon uptake and emissions are produced.
Development of a draft national framework for climate change adaptation. Establishment of all components of the Canadian Climate Impacts and Adaptation Research Network (C-CIARN).	Progress report on implementation of the strategic plan and operation of C-CIARN office. Annual report on C-CIARN.	 Level of participation in C-CIARN by researchers and stakeholders.
Develop 10 new maps taken from a 5NR project, with about 50 underlying layers, supporting documentation *etc.* on the impacts of climate change.	Project completed.	Target met.
Work with CFS to bring a refined version of NatGrid into the Atlas of Canada.	Project completed.	New grid used in Atlas of Canada.
Develop a sophisticated Web portal to access NRCan and international information on climate change.	Project completed.	Number of users accessing portal.
Promote understanding and accessibility of GSD products, services and operations for sustainable development and environmental applications.	Continue to build awareness of role of space geodesy for climate change and monitoring global geophysical fluids.	Collaboration for an enhanced geodetic infrastructure for application to geodynamics and the environment.
Participate in international GPS, VLBI and gravity services with linkages to climate change studies.	Ongoing.	Canadian influence on international organizations.

3.2: Environmental Stewardship: Geoscience and geospatial knowledge for environmental policy and risk management of development.

- Impacts of Infrastructure Development
- Anthropogenic Substances
- Environmental Monitoring

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Geotechnical properties GIS database and Beta PIRAMID software developed for risk based hazard assessment along northern pipeline corridors.	Reports on soil-pipeline interaction models for frozen and unfrozen soils.	Requests for publications.
Two reports on modeling to assess the effects of ice scour on coastal zone infrastructure.	A report on combined ice-soil-pipeline interaction model.	Application of models for siting, maintenance and regulation of new pipelines.
Report on tests of deep-towed seismic methods for delineation of sub-seabottom geotechnical properties in Hibernia.	Evaluation of seismic methods for solving sub-seabottom geotechnical problems in Hibernia.	Application of results in site selection and design of offshore infrastructure. Performance of the new deep-towed system. Adoption of methods by the private sector.
Database of pollutant and trace metal analyses from monitoring Arctic ice caps. Databases, maps and reports on Metals in the Environment (MITE) studies of natural sources and weathering processes.	Publications on pan-Arctic pollution and the 100-year history of trace metal deposition on Devon Ice Cap.	Papers accepted in international scientific journals. Findings reported in news media. Reduction of pollution from power plants and smelters, as evidenced by industrial monitoring figures.
Publication on the impact of Baie de Chaleur smelter emissions on the environment.	Publications on studies of power plant and smelter emissions at Sheerness and Trail.	Influence of research data indicated by citations, sales, and workshop participation.
Technical reviews and provision of advice on environmental impact assessments, as required under CEAA.	Technical reviews and provision of advice on environmental impact assessments, as required under CEAA.	Continued reliance on the GSC for the review of environmental impact assessments.
Monitoring of environmental changes through: NWT lake sediments to assess changes in lake acidity; sediment transport on Sable Island Bank; marine tailings survey, Newfoundland.	Report on the origin of deep permafrost, Beaufort Sea.	Increased inclusion of geoscience components into assessments. Level of public awareness of local environmental sensitivity issues.
Publications and associated maps that establish the effects of weathering on metals and distinguish natural and anthropogenic sources of metals in the environment (MITE).	Publications and associated maps that establish the effects of weathering on metals and distinguish natural and anthropogenic sources of metals in the environment (MITE).	Completion of MITE projects and delivery of reports as scheduled. Requests for publications and data.
Feasibility study of a methodology for identifying non-point source pollution (urban and industrial) in northern Quebec.	Develop the methodology for studying non-point source pollution.	Application of the methodology to the problem of non-point source pollution.
Establish natural levels of potentially toxic metals (mercury) and assess the natural processes leading to their toxicity.	Maps of areas with anomalous toxic metal levels.	Numbers of maps sold and enquiries received.
Develop a change detection method for environmental impact assessment that uses modern science and traditional knowledge. Monitor areas in Labrador where major physical developments are targeted.	Maintain links with Aboriginal people and partners. Produce a strategic plan for monitoring new physical projects related to Aboriginal and environmental issues in the northern regions.	Methodologies being used in monitoring.

3.2: Environmental Stewardship (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Develop a resource-based economy project with the Innu Nation to transfer remote sensing technology for eco-tourism and other job creation opportunities.	Identify ecology landscape indicators that quantify environmental changes and develop a strategy to use remote sensing for monitoring the quality and quantity of surface water.	Increase in revenue from eco-tourism.
Develop a demonstration project with the geomatics industry and gas pipeline companies to apply remote sensing to the northern regions.	Develop more sophisticated products for use by the oil and gas industry in environmental assessment activities.	Technology adopted by pipeline companies. Remotely sensed data products suitable for environmental assessment are produced.

NRCan Goal Four: To contribute to the safety and security of Canadians.

ESS Goal 4: Provide geospatial and geoscientific knowledge to enhance the safety and economic security of Canadians.

Earth Sciences Sector Appropriation by objective ($ 000)			
ESS Goal 2	2001-2002	2002-2003	2003-2004
4.1: Natural Hazards and Emergencies	11 456	10 220	10 221
4.2: Comprehensive Test Ban Treaty	482	482	482
4.3: Boundaries	1 004	1 005	1 005
4.4 : Property Rights and Surveys	3 473	3 473	3 473
4.5: Navigation	2 116	2 117	2 117
Total	**18 531**	**17 297**	**17 298**

4.1: Natural Hazards and Emergencies: Deliver authoritative data, information, advice and support to those responsible for avoiding and mitigating the impact of, and responding to, natural hazard emergencies and disasters.

- Emergency Preparedness
- Nature of Earth Processes
- Global Disaster Information Network

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Provide Canada's emergency mapping service in accordance with the Canada Emergency Mapping Manual.	Ongoing.	Response time in real and simulated emergencies.
Plan modernization of emergency mapping and obtain partners' support.	Start modernization of emergency mapping.	Decision on service levels and funding. Approved service levels are met within budget. Minimal downtime of stations and data transmission functions.
Locations and magnitudes of earthquakes felt in Canada.	Ongoing.	Time required locating, characterizing and reporting on significant earthquakes.

4.1: Natural Hazards and Emergencies (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Issue press releases for earthquakes felt in Canada; automatically notify public utilities and transportation clients; provide information to the media, public and industry.	Ongoing.	Number of successful Autoloc alerts. Increased of use of the Natural Hazards Web site by professional clients and the general public.
Seismic/ ground response information for National Building Code (NBC).	5th generation seismic hazard map for Canada based on 2003 NBC. An enhanced and updated model for seismic input to 2009 iteration of the NBC.	Acceptance by Canadian National Committee for Earthquake Engineering of seismic input to the NBC.
Hourly forecasts of magnetic activity, "24/7".	Ongoing.	Use of website for forecasts and

Magnetic field data available in close-to-real-time, "24/7".		downloadable data.
Prototype second stage GIC (geomagnetically induced currents) forecast system.	Working GIC forecast system.	Support from pipeline and utility companies for GIC research.
Accurate, up-to-date directional magnetic information.	Accurate, up-to-date directional magnetic information.	Number of requests for directional information.
Help Canadian industries to develop the capability to interpret the satellite images obtained under the international disaster charter signed by the space agencies.	Project completed.	Canadian analysis capability increased.
Draft report for national assessment of geological hazards (volcanic, seismic, landslide, geomagnetic and floods).	Final report for national assessment of geological hazards (volcanic, seismic, landslide, geomagnetic and floods).	Requests by federal and provincial emergency response agencies to participate in development of the government action plan on hazards.
National databases of landslide locations and hazard maps.	National Landslide Hazard Assessment report; national scale landslide map. Regional scale hazard assessment maps for southern Cordillera, St. Lawrence lowlands and Mackenzie Valley. Case studies of natural hazard areas in Canada and globally.	Initiation of National Landslide Hazard Loss Reduction Program. Number of requests for published and online maps and databases.
Refined landslide process models for landslide hazard reduction in Canada.	Application of shallow geophysical methods on soil properties to other earthquake-prone sites.	Number of requests for expert advice on geohazards pertaining to resource development.
Preliminary report on landslides and other natural hazards within the Central Foreland NATMAP region, Alberta. Report on basin geometry and soft soil properties in increasing earthquake-induced landslide hazard.	Final report on landslides and other natural hazards within the Central Foreland NATMAP region, Alberta.	Number of studies applying these techniques in assessing risk.
Incorporation of Ontario data and publication of 6 mudflow maps for eastern Canada.	Bulletin on landslide hazards in eastern Canada.	Development of new projects and partnerships on landslides.
Operate the Pacific Coast network of GPS sites to monitor continuous crustal motion of the Cascadia seismic hazard.	Operation of the Pacific Coast network of GPS sites. High resolution levelling survey across central Vancouver Island.	Use of GPS deformation estimates in tectonic strain models. Use of positional data by surveying companies.

4.1: Natural Hazards and Emergencies (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Two-dimensional stress model for SW B.C. to understand tectonic stress field responsible for west coast megathrust and crustal earthquakes.	Catalogue of west coast earthquake focal mechanisms.	Improved earthquake hazard maps of Cascadia.
Publication of results from satellite-based radar imagery.	Publish results from the integration of GPS, InSAR and absolute gravity data.	Use of rebound estimates for ice sheet models and GPS applications.
Publication of postglacial rebound model results for Cascadia, to determine what portion of crustal deformation is due to deglaciation.	Publication of improved sea level change for SW B.C., to determine what portion of crustal strain is due to sea-level change.	Improved data is provided to emergency response agencies.
Installation of up to 30 geophysical observatories of the POLARIS network.	Installation of up to 24 geophysical observatories of the POLARIS network.	Improved data is provided to emergency response agencies, public utilities and transportation companies.
Deliver the scientific products called for under the GEOIDE hazards project.		
Deployment of CORK observatory instruments in the Nankai Subduction Zone (NSZ), Costa Rica Rift (CRR) & Mariana Forearc (MF). Produce a synthesis paper on the Juan de Fuca Ridge CORK deployments.	Report on CORK data for NSZ, CRR and MF. Publish the "Hydrogeology of Oceanic Crust" AGU Monograph.	Use of instrumentation by the international scientific community.
Publish a map and interpretation of Georgia Basin multibeam mapping. Publish analyses of Red River paleoflood studies.	Synthesis reports on geology and seabed stability of the Georgia Basin. Final report to Red River Flood Protection Program.	Use of geoscience information for decisions on coastal and nearshore development. Use of geological information in designing flood protection and mitigation strategies along the Red River.
Accurate magnetic directional information for navigational products provided via World Data Centres and INTERMAGNET.	Accurate magnetic directional information for navigational products provided via World Data Centres and INTERMAGNET.	Minimal interruption of data transmission.
Documented role of GSC in FNERP (Federal Nuclear Emergency Response Plan).	Participation in FNERP simulations etc. as required.	GSC requested to participate in FNERP activities.
Continued development of ground based, mobile gamma-ray spectrometry for emergency response.	Ongoing development of mobile response capability.	Pick up and use by emergency response agencies.
Participation in Interagency Volcanic Ash/Hazard working group emergency exercises.	Annual update of emergency operating procedures and participation in simulations.	Time required for notification of airlines and emergency measures organizations of ash hazard.
Analyze and apply precise geodetic techniques (VLBI, GPS, gravimetry) to studies of global and crustal dynamics (GSC/GSD).	An improved network for natural hazards monitoring.	Information about the use of the spatial reference frame for monitoring geodynamics.
Deliver the first version of the Canadian part of Global Map to the international community. Propose that the Crown relinquish copyright on this data set. Refocus the Hydrology Program on data integration for flood forcasting in the Red River Basin. Participate in the Red River action plan by providing relevant Geospatial Databases.	Ongoing.	Canadian base data will, for the first time, fit into an international framework database.

4.2: Comprehensive Test Ban Treaty: Deliver Canada's monitoring service responsibilities under the International Test Ban Treaty (CTBT).

- Monitoring and Reporting Seismic Events

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Operate Canada's seismic and infrasound facilities for CTBT.	Operation of Canada's seismic, infrasound and hydroacoustic facilities for CTBT.	Minimal downtime of observatories.
Hydroacoustic array installed on Queen Charlotte Islands.	Data relayed to and incorporated in CTBTO International Monitoring System database (Vienna)	CTBTO certification of monitoring stations to international standards.
Data relayed to and incorporated in the CTBTO International Monitoring System database (Vienna)	Ongoing.	Minimal interruption of data transmission.

4.3: Boundaries: In partnership with the United States Section of the International Boundary Commission, maintain an "effective boundary line" between Canada and the U.S.A., as set out in the international treaties. Define Canada's provincial, territorial and federal political boundaries and international offshore boundaries.

- Canada – U.S. Boundary
- Electoral Boundaries
- Provincial and Territorial Boundaries
- Marine Boundaries and Geoscience Surveys

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Inspect and maintain the boundary, which includes clearing 50 km of vista, inspecting 300 monuments, repairing 50 monuments, inspecting 50 boundary control stations, establishing 10 new boundary control points and positioning 75 boundary points by GPS.	Annual objectives are determined in partnership with the United States Section of the International Boundary Commission.	Accomplishment of annual objectives. Stakeholder satisfaction as measured by the biennial LSD client satisfaction measurement program. Successful resolution of any boundary-related issues.
Provision of technical services as required.	Provision of technical services as required.	Services delivered on time and as required. Client satisfaction as measured by the biennial LSD client satisfaction measurement program.
Meet and resolve issues as required. Propose new legislation for the Alberta/British Columbia boundary to resolve current issues	Meet and resolve issues as required.	Client and stakeholder (specifically other Government Agencies) satisfaction as measured by the biennial LSD client satisfaction measurement program.

4.4: Property Rights and Surveys: Maintain a national centre for facilitating flexible and adaptable property rights infrastructures that utilize the Canada Lands Survey System. In the role of corporate surveyor for the federal government, regulate all surveys and manage the survey programs of administering department on Canada Lands.

- Adapting the CLSS to Individual Needs
- Canada Lands Survey Records
- Canada Lands Survey System
- Land Administration and Management

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Update standards for surveys and survey documentation and the Manual of Instructions for the Survey of Canada Lands. Manage the safe archival of the Canada Lands Survey Records (CLSR).	Ongoing. Manage the safe archiving of the Canada Lands Survey Records (CLSR) documentation.	Broad acceptance of standards by clients and stakeholders.
Conduct quality monitoring of surveys on Canada Lands and on private lands in the northern territories.	Conduct quality monitoring of surveys on Canada Lands and on private lands in the northern territories.	Feedback on quality monitoring.
Issue contracts to the private sector to repair survey frameworks based on available resources.	Issue contracts to the private sector to repair survey frameworks based on available resources. Undertake a benchmark process for a future look at the CLS system.	Records maintained to archival standards and retrievable on demand. Peaceful occupation of land interests. Surveys conducted in a timely and cost effective manner. Client and Stakeholder (specifically contractors and OGD's) satisfaction as measured by the biennial LSD client satisfaction measurement program.
Issue and manage $2M worth of land survey contracts to the private sector.	Issue and manage approximately $2M worth of land survey contracts, as required, by OGDs to the private sector.	Client Satisfaction as measured by the biennial LSD client satisfaction measurement program
Issue and manage $7M worth of land survey contracts to the private sector.	Issue and manage approximately $7M worth of land survey contracts to the private sector as required by programs.	Fulfillment of the government's responsibilities as defined under settlement legislation. Sound financial and contract management. Meeting of milestones. Client and stakeholder satisfaction as measured by the biennial LSD client satisfaction measurement program.

4.5: Navigation: Facilitate access to reliable and consistent reference frames for positioning and reliable charts and publications for aviation.

- Aeronautical Products
- Canadian Spatial Reference System

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
For the safety and efficiency of aviation in Canada, publish revised IFR aeronautical charts every 56 days and 25 revised VFR aeronautical charts per year.	Ongoing.	Timely publication of aeronautical charts. 100% cost recovery and 75% client satisfaction. Number of charts. Unit cost per chart. Note: In the free market for aeronautical charts, these standard business performance indicators are proxies for contribution to aviation safety.
Meet requirements of major agreements with DND, NAV CANADA, TC and US NIMA.	Ongoing.	Renewal of agreements with 100% cost recovery.
Develop and sell digital aeronautical products required by clients, recovering both ongoing and invested costs.	Ongoing.	Time required to recover the $2M invested in developing digital products.
By September 2001, decision on renewal of civil aeronautical charting agreement with NAV CANADA.	Implement decision.	Acceptable renewal or contingency plan developed. Progress on approved decision.
Operate ATS's quality management system and maintain it to the ISO 9001 standard.	Operate ATS's quality management system and maintain it to the ISO 9001 standard.	Renewed ISO 9001 registration.
Build on the ATS's National Quality Institute Canada Award for Excellence 2000, to make it a regular management report.	Ongoing. Use regularly updated Activity Based Costing (ABC) models to manage operational costs.	Scope of application of the NQI management framework. March 2002 NQI report. Employee satisfaction.
Improve visibility and accessibility of the Canadian Spatial Reference System (CSRS) and GSD through promotional activities, World Wide Web presence and enhanced online data access. Coordinate federal and provincial initiatives for needs and opportunities related to the CSRS infrastructure.	Continued availability of CSRS products for integration of CSRS in positioning applications. Ongoing with continuing focus on areas of applications and needs for spatial positioning.	Availability of CSRS as a standard of reference for all positioning in Canada. Report on feedback from client surveys. Report of the Canadian Geodetic Reference System Committee actions to the Canadian Council on Geomatics.

NRCan Goal Five: To manage the department efficiently and effectively.

ESS Goal 5: Ensure that the Earth Sciences Sector is a forward-looking, rewarding, and effective and efficient workplace, and that it meets the needs of its clients.

5.I: Leadership: Provide direction and leadership for Earth Sciences Sector programs and operations in order to contribute to departmental and national activities and policies, with respect to national needs and concerns.

- Strategic and Management Improvement Plans
- ESS Goals and Objectives
- Organizational Culture

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Provide on-going support in the implementation and monitoring of the ESS Strategic Plan and Business Plan.	Ongoing.	Based on year-end reports, look for improvement in the quality of ESS plans, reports and performance management.
Distribute accountability accord. Prepare individual work objectives and learning plans. Hold Town Hall meetings to communicate achievements twice a year.	Annual distribution of accountability accord. Annual preparation of individual work objectives and learning plans. Hold Town Hall meetings to communicate achievements twice a year.	Achievement of accountability accord. Completion of work and learning plans. All planned meetings are held.
Support the ADM, AADM and ESS senior management in delivering the Sector's mandate.	Ongoing.	Enhanced Sector ability to meet its mandate.
Coordinate Sector input to NRCan planning documents, including the annual Performance Report (Sept. 2000), President's Report (Sept. 2001) and Report on Plans and Priorities (Feb. 2002) to Parliament.	Ongoing.	Accurate reflection of ESS activities and priorities in government documents.
Provide strategic input and advice for Sectoral planning documents (e.g. Strategic Overview for the ESS Business Plan), and ESS/NRCan management retreat.	Ongoing.	ESS program and policy priorities linked to government policy and support of good governance.
Represent ESS at departmental committees to review and recommend changes to corporate, administrative and HR policies and issues.	Continued participation on all committees.	ESS influence on recommendations and contribution to decisions made by these committees.
Assist Sector senior managers in the government's response to recommendations in CSTA reports on Science Advice for Government Effectiveness (SAGE), Building Excellence in Science and Technology (BEST), Science and Technology Excellence in the Public Service (STEPS) and the review of Science Advisory Bodies.	Ongoing.	Consensus reached on strategies to effectively deliver Sector S&T.
Continue to ensure functionality of Advisory Committees for Technical Field Supply Services, Sector Human Resources Committee, Geomatics, Professional Development Program Steering Committee, and Awards and Recognition Committee.	Ongoing.	Effective mechanisms in place to plan, coordinate and respond to clients' needs.
Transmit timely debriefs and direction to staff regularly. Hold an annual meeting with AADM and MASD staff.	Information forwarded to staff on a regular basis. Annual meeting scheduled with AADM.	Better informed organization contribute to timely decisions and effective results.
Coordinate Sector input to NRCan component of Annual Federal S&T Report.	Ongoing.	Accurate reflection of ESS activities and priorities in the S&T Report.

5.I: Leadership (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Forward all DMC/SMT debriefs and minutes to staff upon receipt. Plan an annual Division meeting with AADM.	Information forwarded to staff on regular basis. Annual meeting scheduled with AADM.	Staff informed. Meetings held with AADM.
Support ESS science/policy dialogue with ESS branches/divisions in major issue areas (e.g. groundwater, natural hazards, etc.).	Ongoing.	Strengthened policy input to science programs and science input to policy initiatives.

Coordination of ESS bi-annual input on ESS commitments identified in NRCan Sustainable Development Strategy (SDS).	Ongoing.	ESS interests and concerns reflected in implementation of NRCan's SDS.
Initiate/coordinate the development of Cabinet documents and TB submissions, and provide timely and strategic information on Cabinet and Parliamentary processes.	Ongoing.	On-time delivery of documents and submissions, with appropriate ESS content.
Prepare/coordinate Earth Sciences Sector briefing books and slide decks for departmental officials.	Ongoing.	Client/stakeholder satisfaction.
Brief SMT, branches/divisions and other ESS groups (e.g. GSC Program Committee, GC Steering Committee) on federal government and OGD priorities.	Ongoing.	Improved linkage of ESS programs and policy priorities to government policy in support of good governance.
Coordinate ESS inputs to existing and emerging policy pressures, including ground water, rural and Aboriginal, natural hazards, science agenda, Innovation agenda, etc.).	Ongoing.	Improved quality of information to support informed decision-making.
Support employment equity initiatives and alternative work arrangements by "scoping-out" opportunities for balancing client expectations with employee preferences.	Continued support of employment equity initiatives and alternative work arrangements.	The successful introduction of alternative arrangements which still provide clients with expected service levels.
Share best practices with similar operations within and external to the Division.	Communication and implementation of best practices.	Implementation of best practices.
Reward staff in accordance with the Sector Awards Program.	Participation in Awards Program.	Number of awards presented.

5.2: Human Resources: Foster an environment for Earth Science Sector staff to encourage employees to reach their full potential, participate in decision-making processes, and inspire staff to fulfill the Sector's goals and objectives.

- The 3R's Strategy
- The STEP Program
- Employee Surveys

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Review skill sets of ESS Info staff members in context of ESS Info strategic directions. Examine relativity of positions and continue to develop and implement appropriate learning plans.	Establish learning plans on an ongoing basis.	Staff feedback. Effective learning plan established.
Identify synergies for improved client service.	Ongoing.	Development of an effective team with strong client focus and excellent service delivery.
Develop and implement training and development systems and processes to promote a learning environment, support business needs and address gaps.	Establish systems on an ongoing basis.	Learning plans for each division are implemented, monitored and reported on.
Coordinate, support and monitor the Sector Recruitment-Rejuvenation-Retention (3R) Strategy including: 2% strategic recruitment target; Management Development Programs; mentoring and coaching program; exit questionnaire; Science and Technology (S&T) competency profiles and Graduate Opportunities Strategies (GOS).	Continued monitoring of programs.	Managers use the strategy as a tool for managing and planning their human resources activities.
Provide coordination and support to the Sector 's implementation of human resources plans. Monitor and report on Official Languages, Employment Equity, training and demographic results.	Review actual vs. target achievements annually.	Plans implemented and statistical reports on progress prepared. Information used in annual planning process. Training complies with the business needs and objectives of the Sector.
Implement Universal Classification Standard (UCS).	Ongoing.	Positions converted with minimal grievances.
Prepare Sector demographic reports to assist ESS Managers in their HR planning activities.	Ongoing.	Information used in annual planning process.
Continue to promote STEP, GPDP, Volunteer, and S&T Internship Programs through the Intercom web site, documentation sent to partners, presentations to educational institutions, participation in Year of the Volunteer activities.	Continuation of year 1 deliverables.	Increased partnerships and collaboration.
Conduct survey of ESS employees and respond to results by preparing an action plan to address concerns. Implement recommendations in a timely fashion.	Continue implementation of results.	Improved dialogue with staff.
Devise Employment Equity short and long term plans to match local market availability of under-represented groups to suitable vacant positions.	Ongoing.	Reach target of LMA to support a workforce of diversity and strive for sustainable development.

5.3: Clients and stakeholders: Continue to align the deliverables of the Earth Sciences Sector with the needs and expectations of clients and stakeholders, as required and feasible.

- Quality Systems
- Networking with Stakeholders
- National and International Participation
- Access to the ESS Information Infrastructure
- Strategic Communications

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Review all Sector MOUs as to ascertain the purpose of each agreement level of activity and actual benefits accruing to each party.	Revise the ESS MOU guidelines.	MOUs that reflect the strategic direction of the Sector and have meaningful benefits to the parties.
Conduct client surveys and implement additional, more effective statistical tracking of network applications, consumer trends, etc.. ESIC – of NCR and regional ESS internal clients; GSC Bookstore - of on line clients; Computer Technology - of Helpdesk clients.	Client surveys – cartography. Editing.	Comments received, reviewed, and followed up on as appropriate. Improved Client Service. Improved evaluation of Internet and Intranet information and services.
ESIC to conduct a client satisfaction survey to assess impact of royalties on Document Delivery Services.	Other targeted surveys.	Survey recommendations used.
Communicating the Sector standard web survey and web site maintenance tools.	Ongoing through various means of communications.	Web standards used throughout the Sector.
Implement the new ISO 9001 Standards in the Cartographic Services sub-division.	Extend ISO initiatives.	ISO certification achieved.
Review and maintain levels of service standards.	Annually.	Respond to client survey and make any necessary adjustments.
Facilitate the development of collaborative approaches to federal-provincial and territorial geomatics and geoscience activities.	Ongoing.	Increased collaboration with provincial counterparts.
Ensure liaison with stakeholders, organizations and advisory bodies, and coordinate ESS and stakeholder initiatives, including the provision of secretariat services to advisory boards, and support to national committee meetings and conferences, such as MNABES, CCOG, and MMC.	Ongoing.	Closer cooperation with stakeholders in planning and delivering, in a timely manner, coordinated products and services.
Visit ESS offices outside of the NCR to meet with regional staff regarding current issues and priorities, and encourage regional staff to visit PPCD.	Ongoing.	Closer cooperation with stakeholders in planning and delivering, timely, coordinated products and services.
Implement ISO 9000 certification for financial and administrative services offered by MASD to ESS.	Preparing a Manual of financial and administrative services. Arranging of MASD preliminary audit and final certification.	Client satisfaction. Conformity to standards. Use of non-conformance reports.
Continuation of ISO practices within TFSS.	Review of performance indicators and standards.	Time reduction for processes. Requests processed quickly and efficiently.
Redefine service standards and performance measurement, and inform clients.	Improve process procedures.	Performance measurement standards are improved. Procedures are graphically presented.

5.3: Clients and stakeholders (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Coordinate the activities of the Technical Field Support Services (TFSS) Advisory Committee in consultation with Division representatives to determine field activities requirements in order to satisfy client's plans and expectations from TFSS.	Meet with Division representatives to discuss issues and concerns regarding field activities and communicate what clients can expect from TFSS.	Services should meet or exceed client expectations.
Conduct survey of MASD clients, prepare action plan implement recommendations, and make adjustments and / or service improvements.	Continue to monitor the progress of implementation results.	Improved client service. Increased dialogue with client / service provider.

5.4: Suppliers and Partners: Develop relations with suppliers and partners, and leverage capacity.

- Developing Partnerships
- User Access to Information and Services
- Access to Facilities
- Supplier Relations

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Ongoing development of common licenses for information services and products.	Ongoing.	Wide availability of documents in NRCan and advantage of volume document prices.
Participation in cooperative initiatives in the information communities to negotiate agreements with suppliers resulting in reduced costs and other benefits.	Ongoing.	Reduced prices for supplies and services.
Develop and maintain partnerships that enhance collections and/or services but reduce duplication. Examples: Act on the MOU between ESS Info and the ESS Mapping Services Branch to provide emergency access to the National Topographic Maps of Canada held in the ESIC Map Collection. MOU with Depository Services Program to provide access to GSC publications for ESIC exchange partners.	Continual updating of NTS map collection in ESIC to ensure effective response to emergency situations as required.	MSB personnel have 24-hour, year-round access to the collection in times of emergency.
Contribute to national and international cooperative efforts to preserve and provide access to geoscience literature; lead the further development of the Long Range Preservation Plan for the preservation of geoscience literature in North America as part of the work of the Geoscience Information Society's Geoscience Preservation Committee.	Preservation activities continue to ensure the long-term availability of geoscience literature.	A long term plan for the preserving of geoscience literature in North America is established.
ESIC to implement Copyright Royalty recovery measures and provide guidance to other Federal libraries on implementation	Project completed.	Revenues received from royalties.
Provide a liaison and coordination role in targeting key departments and central agencies for meetings on issues of common concern.	Ongoing.	Improved federal partnering and decision-making. ESS relations strengthened with other federal departments.
Clarify roles and responsibilities of MASD Administrative, Financial and HR staff to avoid duplication of resources and optimise efficiencies. List roles and responsibilities established and communicate to clients and service providers. Review Corporate Services Sector (CSS) study on delivery services.	Follow-up and review established responsibilities. Follow-up and review recommendations.	Roles and responsibilities clarified. Client satisfaction. Cost savings and more streamlined processes.

5.4: Suppliers and Partners (continued)

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Maintenance of MASD web site, in particular Intercom site. Align Sector processes with departmental initiatives to meet Government On Line (GOL) and Network On Line (NOL) objectives.	Continuance of same.	Improved means of access to information by clients. Improved communication.
Continue to solidify partnerships for STEP, GPDP and S&T Internship Programs.	Continue to solidify partnerships for STEP, GPDP and S&T Internship Programs.	Increased partnerships and collaboration with external sources of funding.
Develop, consult and implement ESS Growth Plan along corporate timelines.	Ongoing.	Improved configuration and modernisation of office space.

5.5: Planning: Align the Earth Sciences Sector's planning activities and practices for its programs and their delivery with its strategic goals and priorities.

- Business Planning
- The Proposal-driven Sector Project System (SPS)
- Project Management Standards

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Preparation of business plan for Sector and divisions.	Annual preparation of business plans.	Delivery of business plan on time.
Undertake an evaluation of the progress on implementing the ESS Strategic Plan. Implement the business planning process, including the new Sector business planning model.	Project completed.	Increased management accountability. Business plan used as a management tool to drive change.
Promote full implementation of the Sector Project System (SPS) to support project management and reporting.	System upgrades in response to client requirements.	User acceptance of SPS.
Facilitate the implementation of Sector-wide project management criteria.	Ongoing.	Improved project management practices throughout ESS.

5.6: Process Management: Improve effective and efficient administration and processes for delivering programs, products and services.

- Modernization of Comptrollership
- Common Sector Business Practices
- Management of the Revolving Fund
- Trends and Opportunities

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Continue practices related to Modernization of Comptrollership / Financial Information Strategy (FIS) in cooperation with CSS.	Same practice.	Implementation in all areas.
Prepare documents for public awareness including the Business Opportunities Bulletin and ESS Price List.	Ongoing.	Documents prepared and made available to the public.
Obtain ISO 9000 certification for financial and administrative services in MASD. Continuation of ISO practices within TFSS. Integration of ISO procedures into client business practices. Redefine service standards and performance measurement, and inform clients.	Continuous improvement in process procedures. Review of performance indicators and standards. Evaluation of Electronic Document Management System pilot project with an end object to establish Records Document Information Management System in other regional facilities as well as the NCR.	Client satisfaction. Statistical sampling. Non-conformance reports. Time reduction for processes. Requests processed quickly and efficiently. Uniform business practices.
Implementation of new method of purchasing in collaboration with CSS. Upgrade the TFSS inventory system to be compatible with internet technology.	Completion of the installation of an Integrated Document Management System within ESS.	Capturing documentation becomes more transparent and is maintained in an available, understandable and usable manner for business accountability.
Support the financial management of the revolving fund.	Ongoing.	A well-managed R.F. Acknowledgement of internal expertise.
Continued maintenance of Assets Management Module nationally. Assist users to adjust to process and possibilities so that it is a tool capable of aligning division operations with business practices such as LTCP, FIS, and Strategic Planning. Optimisation of disposal process nationally to ensure better management of assets.	Ongoing.	More equitable distribution of assets.
Coordination of the implementation and progressive integration of electronic records management within ESS. These include aligning the application of Subject Classification for Information Holdings with National Archives Function Based Classification System; installing system, coordinating and delivering training and awareness sessions. A pilot implementation of an Electronic Document Management System (EDMS) is currently underway in Sherbrooke.	Ongoing.	Modernised state of the art record management capability.
Implementation of NRCan Accommodation Policy and Guidelines within the Sector to accommodate growth.	Ongoing.	Equitable distribution of office space.

5.7: Performance Reporting: Report on performance in delivery of programs, products and services, for accountability to all clients, in support of continuous improvement.

- Internal and External Reviews
- Impact Studies

Year 1 Deliverables	Years 2 & 3 Deliverables	Performance indicators
Conduct occupational health and safety evaluations of fieldwork including site visits with three ESS field parties and provide report.	Conduct follow-up reviews. Verify implementation of recommendations with the field party chiefs. Complete and distribute follow-up reports.	Improved occupational health and safety as a result of implementing recommendations.

Communicate and assist with the implementation of the Departmental Task Hazard Analysis Directive, by coordinating training of all supervisors and assisting with the evaluation process to ensure all critical tasks are evaluated.	Ongoing	A safer work environment and a reduction in injuries.
Training of managers, supervisors and committee members on the changes to the Canada Labour Code (CLC) Part II.	Ongoing.	Knowledge of CLC, Part II.
Conduct security threat risk assessments of ESS operations.	Continuation of assessments.	Improved security practices.
Report on training activities for all ESS divisions to ensure timely and adequate knowledge and skills to support business objectives.	Annual.	Training complies with in line with the organisation's priorities.
Respond to all Sector access to information and privacy consultations nationally. Create and distribute to senior management, an annual Sector ATIP report.	Ongoing.	Improved security practices. ATIP requests responded to on time. Results recorded in report.
Implement the new business planning process, which includes the preparation of an ESS Annual Report, reporting against the deliverables stated in the Business Plan.	Preparation of an ESS Annual Report, reporting against the deliverables stated in the Business Plan.	Annual report used by management to show achievements and /or change.

4. Earth Sciences Sector: Management Improvement Plan

ESS operates with a quality management philosophy in order to be an effective organization striving to provide excellent service to clients, to be a better place to work and to provide good value to the Canadian taxpayer. In accordance with this philosophy, the Sector has adopted the following management principles:

- a primary focus on clients;
- leadership through involvement and example;
- cooperation, teamwork and partnering;
- respect for the individual and encouragement for people to develop to their full potential;
- recognition of the importance of the contribution of each and every individual;
- commitment to process-oriented, prevention-based strategy;
- the continuous improvement of methods and results;
- a fact-based approach to decision-making;
- a responsibility to stakeholders and to society; and
- the application of the principles of modern comptrollership.

Management Framework

The Sector has developed a framework that helps it maintain and develop the tools and practices it needs to manage itself according to its principles. The framework reflects NRCan's *Guide to Good Management* and is composed of these principal elements:

- leadership and planning;
- clients and stakeholders;
- process improvement;
- human resources;
- suppliers and partners; and
- Sector results and performance.

Management Improvement Plan

For the planning period 2001/2002 Sector management improvement initiatives will be posted on a web-site designed and maintained by the Sector Quality Advisor.

5. Earth Sciences Sector: Human Resources: Key Initiatives

After assessing S&T capacities within ESS for the next decade, the Sector developed a strategy to recruit, retain and rejuvenate human resources. The four main thrusts of the strategy involve
- recruiting new staff to help ESS deliver its current and future business;
- providing an attractive work environment;
- providing career development tools and coaching for employees; and
- seeking partnerships with other organizations to open up new horizons for ESS employees.

Major components of the strategy are as follows.

Under a strategic plan for external S&T recruiting, ESS will recruit approximately 25 entry-level S&T employees (equivalent to two percent of the ESS budget) in the following 12 priority areas of expertise:
- multidisciplinary geology and geophysics (marine, bedrock, surficial);
- mineral deposits, particularly gold;
- hydrogeology;
- climate change science and monitoring;
- natural hazards science;
- data modelling and simulation;
- environmental geochemistry;
- space geodesy;
- application of earth observation imagery to mapping;
- hyperspectral earth observation imagery;
- legal surveys; and
- Geographic Information Systems (GIS) and information management.

ESS will develop a skills profile to be used in the selection process. It will help the Sector find employees who have the following qualities, as well as relevant professional qualifications:
- flexibility;
- team spirit;
- entrepreneurial spirit;
- a multidisciplinary approach;
- communication skills; and
- information technology skills.

Thirty percent of new employees will be on term appointments for at least two years, and the remaining 70 percent will occupy indeterminate positions.

ESS will recruit, retain and rejuvenate its human resources through
- the Geomatics Professional Development Program (GPDP);
- the Professional Enhancement Program (PEP);
- the Management Development Program;
- the ESS–Natural Sciences and Engineering Research Council (NSERC) research partnership program;
- scholarships, including Aboriginal scholarships; and
- the Federal Student Work Experience Program (FSWEP).

In addition to these initiatives, the Sector will emphasize continuing education; collect and analyze data through departure interviews; and develop and implement an action plan to address employee survey results concerning the work environment. ESS will emphasize external recruitment and internship programs by developing a marketing plan that includes web sites and advertisements in the print media, and by targeting university campuses and professional associations, such as the Geomatics Industry Association of Canada (GIAC).

The GPDP will include 12 new participants every year and will receive funding from the GSC, GC, and 10 private sector partners and public agencies. Work assignments under this program will be at ESS, in the private sector or at a government agency.

Professional Enhancement Program

The Professional Enhancement Program (PEP) allows ESS and external organizations to participate in collaborative research, and to share expertise and operating costs for mutually beneficial projects. The main objective of this program is to foster alliances that meet the strategic research goals of ESS and external organizations.

The foundation of the program is a work assignment that broadens the skills and experience of participating staff involved in geoscience or geomatics R&D.

Any qualified indeterminate ESS employee may participate in PEP. The Program is also open to employees in external organizations, including companies, professional associations, universities, centres of excellence, and other government departments and agencies.

PEP will focus on priority areas identified in the GSC, GC and PCSP strategic plans, where the sharing of expertise through employee work assignments between ESS and an external organization will generate value-added synergy for a project. The Sector and the external organization involved in a particular project will define overall project goals and milestones. Each PEP project will be research-oriented and will provide tangible benefits to ESS and the external organization.

Each project will be governed by a negotiated agreement that will specify the obligations and expectations of each party, as well as how the results of the project are to be shared. ESS and the external organization will share each project's operating costs in accordance with the agreement. The home organization will continue to pay the salaries of employees on a work assignment.

ANNEX A:
Earth Sciences Sector
Organization Chart

http://essbb.gsc.nrcan.gc.ca/docs/orgchart_e.pdf

ANNEX B: Directory of Earth Sciences Sector Offices

Geomatics Canada

Geodetic Survey Division
615 Booth Street, 4th Floor
Ottawa, Ontario K1A 0E9
Telephone: (613) 992-2656
Fax: (613) 947-3602

Legal Surveys Division and the International Boundary Commission

Legal Surveys Division
615 Booth Street, 5th Floor
Ottawa, Ontario K1A 0E9
Telephone: (613) 995-4341
Fax: (613) 992-1122

International Boundary Commission
615 Booth Street, 5th Floor
Ottawa, Ontario K1A 0E9
Telephone: (613) 992-1294
Fax: (613) 947-1337

Eastern Regional Operations Centre (EROC)
615 Booth Street, 5th Floor
Ottawa, Ontario K1A 0E9
Telephone: (613) 995-2604
Fax: (613) 995-2612
Cellular: (613) 851-7115
Conference Room: (613) 995-7606

Atlantic Client Liaison Unit
136 Victoria Street East
Amherst, Nova Scotia B4H 1Y1
Telephone: (902) 661-6766
Fax: (902) 661-6769
Cellular: (902) 664-8482

Quebec Client Liaison Unit
320 St. Joseph East
Box 51127—G. Roy
Quebec, Quebec G1K 8Z7
Telephone: (418) 648-5725
Fax: (418) 648-5728
Cellular: (418) 655-4656

Ontario Client Liaison Unit
55 St. Clair Avenue East, Suite 606
Toronto, Ontario M4T 1M2
Telephone: (416) 973-1006
Fax: (416) 973-1004
Cellular: (416) 574-9418

Northwest Territories and Nunavut Regional Office
4920 52nd Street, 4th Floor
Box 668
Yellowknife, Northwest Territories X1A 2N5
Telephone: (867) 669-3949
Fax: (867) 920-6662
Computer: (867) 669-3915
Boardroom: (867) 669-3905

Yukon Regional Office
300 Main Street, Room 225
Whitehorse, Yukon Y1A 2B5
Telephone: (867) 667-3957
Fax: (867) 393-6709

Nunavut Client Liaison Unit
5102—50th Avenue, Room 202
Yellowknife, Northwest Territories X1A 3S8
Telephone: (867) 669-2901
Fax: (867) 669-2930

Western Regional Operations Centre (WROC)
9700 Jasper Avenue, Suite 605
Edmonton, Alberta T5J 4C3
Telephone: (780) 495-2138
Fax: (780) 495-4052

Alberta Client Liaison Unit
9700 Jasper Avenue, Suite 605
Edmonton, Alberta T5J 4C3
Telephone: (780) 495-6174
Fax: (780) 495-4052

Manitoba Client Liaison Unit
275 Portage Avenue, Suite 501
Winnipeg, Manitoba R3B 2B3
Telephone: (204) 983-3793
Fax: (204) 983-0157

Saskatchewan Client Liaison Unit
100 Central Park Place
2208 Scarth Street
Regina, Saskatchewan S4P 2J6
Telephone: (306) 780-5402
Fax: (306) 780-5191
Records: (306) 780-6992

Manitoba Indian and Northern Affairs Canada Land Claims Client Liaison Unit
275 Portage Avenue, Suite 501
Winnipeg, Manitoba R3B 2B3
Telephone: (204) 983-3623
Fax: (204) 984-5828

British Columbia Client Liaison Unit
1550 Alberni Street, Suite 800
Vancouver, British Columbia V6G 3C6
Telephone: (604) 666-5326
Fax: (604) 666-0522

Canada Centre for Remote Sensing
588 Booth Street, 3rd Floor
Ottawa, Ontario K1A 0Y7
Telephone: (613) 947-1222
Fax: (613) 947-1382

GeoAccess Division
615 Booth Street, 6th Floor
Ottawa, Ontario K1A 0E9
Telephone: (613) 947-1245
Fax: (613) 947-2410

Applications Division
588 Booth Street, 3rd Floor
Ottawa, Ontario K1A 0Y7
Telephone: (613) 947-1263
Fax: (613) 947-1385

Technology Assessment Division
588 Booth Street, 3rd Floor
Ottawa, Ontario K1A 0Y7
Telephone: (613) 947-1211
Fax: (613) 947-3125

Data Acquisition Division
588 Booth Street, 2nd Floor
Ottawa, Ontario K1A 0Y7
Telephone: (613) 947-1356
Fax: (613) 943-8201

Mapping Services Branch
615 Booth Street, 7th Floor

Ottawa, Ontario K1A 0E9
Telephone: (613) 947-0793
Fax: (613) 995-2000

Centre for Topographic Information (Sherbrooke)
2144 King Street West, Suite 010
Sherbrooke, Quebec J1J 2E8
Telephone: (819) 564-5600
Fax: (819) 564-5698
Toll-free Telephone: (800) 661-2638

National Air Photo Library
615 Booth Street, 1st Floor
Ottawa, Ontario K1A 0E9
Telephone: (613) 995-4560
Fax: (613) 995-4568
Toll-free Telephone: (800) 230-6275

Aeronautical and Technical Services
615 Booth Street, 1st Floor
Ottawa, Ontario K1A 0E9
Telephone: (613) 992-4456
Fax: (613) 943-8959

Centre for Topographic Information (Ottawa)
615 Booth Street, 7th Floor
Ottawa, Ontario K1A 0E9
Telephone: (613) 995-4921
Fax: (613) 947-7948

Canada Map Office
130 Bentley Road
Nepean, Ontario K2E 6T9
Telephone: (613) 952-7000
Toll-free Telephone: (800) 465-6277
Fax: (613) 957-8861
Toll-free Fax: (800) 661-6277

Geological Survey of Canada

601 Booth Street, 2nd Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 996-3919
Fax: (613) 996-9990
E-mail: info-ottawa@gsc.nrcan.gc.ca

Sedimentary and Marine Geoscience Branch
601 Booth Street, 2nd Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 995-2340
Fax: (613) 996-6575
E-mail: info-ottawa@gsc.nrcan.gc.ca

Terrain Sciences Division
601 Booth Street, 3rd Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 995-4938
Fax: (613) 992-0190
E-mail: info-ottawa@gsc.nrcan.gc.ca

GSC Atlantic
Geological Survey of Canada (Atlantic)
Bedford Institute of Oceanography
Box 1006, Challenger Drive
Dartmouth, Nova Scotia B2Y 4A2
Telephone: (902) 426-3225
Fax: (902) 426-1466
E-mail: info-dartmouth@gsc.nrcan.gc.ca

GSC Calgary
Geological Survey of Canada (Calgary)
3303-33rd Street N.W.
Calgary, Alberta T2L 2A7
Telephone: (403) 292-7000
Fax: (403) 292-5377
E-mail: info-calgary@gsc.nrcan.gc.ca

GSC Quebec
Geological Survey of Canada (Quebec)
2535 Laurier Boulevard
Box 7500
Sainte-Foy, Quebec G1V 4C7
Telephone: (418) 654-2604
Fax: (418) 654-2615
E-mail: info-ste-foy@gsc.nrcan.gc.ca

Minerals and Regional Geoscience Branch
601 Booth Street, 2nd Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 995-4093
Fax: (613) 996-6575
E-mail: info-ottawa@gsc.nrcan.gc.ca

Continental Geoscience Division
601 Booth Street, 4th Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 995-4314
Fax: (613) 995-7322
E-mail: info-ottawa@gsc.nrcan.gc.ca

Mineral Resources Division
601 Booth Street, 6th Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 996-9223
Fax: (613) 992-5694
E-mail: info-ottawa@gsc.nrcan.gc.ca

GSC Pacific
Geological Survey of Canada (Pacific)
9860 West Saanich Road
Sidney, British Columbia V8L 4B2
Telephone: (250) 363-6438
Fax: (250) 363-6500
E-mail: info-sydney@gsc.nrcan.gc.ca

Geological Survey of Canada (Pacific)
101 – 605 Robson Street
Vancouver, British Columbia V6B 5J3
Telephone: (604) 666-0529
Fax: (604) 666-1124
E-mail: info-vancouver@gsc.nrcan.gc.ca

Pacific Geoscience Centre–Western Canada National Earthquake Hazards
9860 West Saanich Road
Box 6000
Sidney, British Columbia V8L 4B2
Telephone: (250) 363-6500
Fax: (250) 363-6739
E-mail: pgcinfo@pgc.nrcan.gc.ca

Pacific Geoscience Centre–Eastern Canada National Earthquake Hazards
7 Observatory Crescent
Ottawa, Ontario K1A 0Y3
Telephone: (613) 995-5593
Fax: (613) 992-8836

Cordilleran Geosciences
101-605 Robson Street
Vancouver, British Columbia V6B 5J3
Telephone: (604) 666-0529
Fax: (604) 666-1124
E-mail: gscvan@gsc.nrcan.gc.ca

Map and Publication Sales
Telephone: (604) 666-0271
Fax: (604) 666-1337

Geoscience Research Library
Telephone: (604) 666-3812
Fax: (604) 666-7186

E-mail: info@seismo.nrcan.gc.ca

National Geomagnetism
2617 Anderson Road
Gloucester, Ontario K1G 3N5
Telephone: (613) 837-4241
Fax: (613) 824-9803
E-mail: coles@geolab.nrcan.gc.ca

Polar Continental Shelf Project

615 Booth Street, 4th Floor
Ottawa, Ontario K1A 0E9
Telephone: (613) 947-1601
Fax: (613) 947-1611

Corporate Services

Assistant Deputy Minister's Office
580 Booth Street, 14th Floor
Ottawa, Ontario K1A 0E4
Telephone: (613) 992-9983
Fax: (613) 992-8874

Chief Scientist Office
580 Booth Street, 14th Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 995-5372
Fax: (613) 996-8059

Policy, Planning and Coordination Division
601 Booth Street, 2nd Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 996-9551
Fax: (613) 943-8296

Senior Advisor (Communications)
580 Booth Street, 14th Floor
Ottawa, Ontario K1A 0E4
Telephone: (613) 947-2789
Fax: (613) 992-8874

Senior Advisor (ResSources)
601 Booth Street, Room 200
Ottawa, Ontario K1A 0E8
Telephone: (613) 995-4089
Fax: (613) 996-8748

Senior Communications Manager
601 Booth Street, 2nd Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 943-8885
Fax: (613) 995-3082

Associate, Assistant Deputy Minister
580 Booth Street, 14th Floor
Ottawa, Ontario K1A 0E4
Telephone: (613) 995-3081
Fax: (613) 992-8874

Human Resources Advisor
601 Booth Street, 1st Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 995-4215
Fax: (613) 947-0146

Sector Financial Advisor Office
615 Booth Street, 4th Floor
Ottawa, Ontario K1A 0E9
Telephone: (613) 995-0842
Fax: (613) 992-3657

Quality Management Office
601 Booth Street, 2nd Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 947-7353
Fax: (613) 992-8874

Business Development Office
615 Booth Street, 5th Floor
Ottawa, Ontario K1A 0E9
Telephone: (613) 996-0441
Fax: (613) 995-8737

Earth Sciences Information Centre
601 Booth Street, 2nd Floor
Ottawa, Ontario K1A 0E8
Telephone: (613) 995-4089
Fax: (613) 996-8748

ANNEX C: List of Acronyms

3R	Sector Recruitment, Rejuvenation and Retention Strategy
4NR	Four federal national resources departments: Natural Resources Canada, Agriculture and Agri-Food Canada, Department of Fisheries and Oceans, and Environment Canada
5NR	4NR plus Health Canada
AAFC	Agriculture and Agri-Food Canada
ABC	Activity Based Consting
ADM	Assistant Deputy Minister
AADM	Associate, Assistant Deputy Minister
AGM	American Geophysical Union
ATIP	Access to Information Program
ATS	Aeronautical and Technical Services
CACS	Canadian Active Control System
CBM	Coal Bed Methane
CCAF	Climate Change Action Fund
CCG	Canadian Coast Guard
CCOG	Canadian Council on Geomatics
CCRS	Canada Centre for Remote Sensing
CEAA	Canadian Environmental Asse ssment Agency
CEOcat	Canadian Earth Observation Catalogue
CEONet	Canadian Earth Observation Network
CFS	Canadian Forest Service
CGDI	Canadian Geospatial Data Infrastructure
CGKN	Canadian Geoscience Knowledge Network
CGNDB	Canadian Geographical Names Data Base
CIDA	Canadian International Development Agency
CLC	Canada Land Code
CLF	Common Look and Feel
CLS	Canada Lands Surveyor
CLSS	Canada Lands Survey System
CLSR	Canada Lands Survey Records
CORDLink	Cordillera Link
CORK	Circulation Obviation Retrofit Kit
CPCGN	Canadian Permanent Committee on Geographical Names
CRM	Centre Research Mexico
CRR	Costa Rica Rift
CSRS	Canadian Spatial Reference System
CSS	Corporate Services Sector
CSTA	Committee of Science and Technology Advisors
CTBT	Comprehensive Test Ban Treaty
CTBTO	Comprehensive Test Ban Treaty Organization
CTI	Centre for Topographic Information
CTI-S	Centre for Topographic Information Sherbrooke

DEM	Digital Elevation Model
DFAIT	Department of Foreign Affairs and International Trade
DFO	Department of Fisheries and Oceans
DMC	Departmental Management Committee
DND	Department of National Defence
DSI	Downhole Seismic Imaging
EC	Environment Canada
EDMS	Electronic Document Management System
EM	Electromagnetic
EO	Earth observation
ESIC	Earth Sciences Information Centre
ESS	Earth Sciences Sector
ESS Info	Earth Sciences Sector Information
EXTECH	Exploration Science and Technology Program
FIS	Financial Information Strategy
FNERP	Federal Nuclear Emergency Response Plan
FSWEP	Federal Student Work Experience Program
GC	Geomatics Canada
GDB	Geospatial Data Base
GDP	Gross DoOmestic Product
GEOIDE	Geomatics for Informed Decisions
GEOSCAN	Bibliographic Database covering all GSC publications
GGP	Global Geodynamics Project
GIAC	Geomatics Industry Association of Canada
GIC	Geomagnetically Induced Currents
GIS	Geographic information system
GOL	Government on Line
GOS	Graduate Opportunities Strategy
GPDP	Geomatics Professional Development Program
GPS	Global Positioning System
GPS-C	Global Positioning System Corrections
GSC	Geological Survey of Canada
GSD	Geodetic Survey Division
GTN-P	Global Terrestrial Network for Permafrost.
HROU	Human Resources Operations Unit
HYDROLINK	An alliance of four world-class organizations created to provide hydrographic and bathymetric products and services.
IBC	International Boundary Commission
IERS	International Earth Rotation Service
IGB	International Gravity Bureau
IgeS	International Geoid Service
IGS	International GPS Service
IM/IT	Information Management/Information Technology
INRS	Institute national de la recherche scientifique
INSar	Interferometric Synthetic Aperture Radar
INTERMAGNET	International Real-time Magnetic Observatory Network
ISO	International Standards Organization
IVS	International VLBI Service
KM/IM	Knowledge Management/Information Management
Landsat-7	Earth observation satellite
LOS	Law of the Sea
LSD	Legal Surveys Division
MADONA	Magnetic Anomaly Database of North America
MASD	Management and Administrative Services Division
MEM	Digital Marine Electromagnetic System
MF	Mariana Forearc
MIP	Management Improvement Plan
MITE	Metals in the Environment
MMC	Mines Ministers' Conference
MNABES	Minister's National Advisory Board on Earth Sciences
MOU	Memorandum of Understanding
MRN	Ministère des Ressources naturelles
MSB	Mapping Services Branch
NADU	North American Data Model
NAPL	National Airphoto Library

NAS	National Academy of Science
NATMAP	National Geoscience Mapping Program
NBC	National Building Code
NCR	National Capital Region
NGR	National Geochemical Reconnaissance
NGSC	National Geosceince Steering Committee
NIMA	National Imaging and Mapping Agency
NOL	Network On Line
NRCan	Natural Resources Canada
NSERC	Natural Sciences and Engineering Research Council
NSZ	Nankai Subduction Zone
NTDB	National Topographic Data Base
NTS	National Topographic Series
OGD	Other government department
ORM	Oak Ridges Moraine
PCSP	Polar Continental Shelf Project
PEP	Professional Enhancement Program
PFRA	Prairie Farm Rehabilitation Administration
PPCD	Policy, Planning and Coordination Division
R&D	Research and development
RF	Revolving Fund
RFP	Request for Proposal
RADARSAT	Earth Observation Satellite
SDS	Sustainable Development Strategy
S&T	Science and technology
SFAO	Sector Financial Advisor Office
SHRIMP	Sensitive High-resolution Ion Microprobe
SMT	Sector Management Team
SMERAC	Senior Mineral and Energy Resource Assessment Committee
SNORCLE	Slave–Northern Cordillera Lithosphere Evolution
SPS	Sector Project System
SQMO	Sector Quality Management Office
STEP	Science and Technology Enhancement Program
STEPS	Science and Technology Excellence in the Public Service
STRATCOM	Sector Strategic Communications Committee
TC	Transport Canada
TFSS	Technical Field Support Services
TBS	Treasury Board of Canada, Secretariat
TGI	Targeted Geoscience Initiative
UCS	Universal Classification Standard
UNCED	United Nations Conference on Environment and Development
UNCLS	United Nations Convention on the Law of the Sea
UNFCC	United Nations Framework on Climate Change
USGS	United States Geological Survey
VFR	Visual Flight Rules
VMS	Volcanogenic Massive Sulphides
VLBI	Very Long Baseline Interferometry
VMAP	Vector Map
WCSB	Western Canada Sedimentary Basin